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Twenty-Fifth

BIENNIAL REPORT

of the

Montana State Board of Health

[redacted]

For the Years 1949-1950

VITAL STATISTICS FOR THE YEARS
1948 - 1949

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1948 - 1949

MONTANA RECORD PUBLISHING CO.
HELENA, MONTANA

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1948 - 1950

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State of Montana

State Board of Health

G. D. Carlyle Thompson, M. D.
Executive Officer
HELENA, MONTANA

October 14, 1950

Hon. John W. Bonner
Governor of Montana
State Capitol
Helena, Montana

Dear Governor Bonner:

I herewith submit the Twenty-Fifth Biennial Report of the Montana State Board of Health.

The period of this report and the activities recorded are wholly within the jurisdiction of the previous Executive Officers, Dr. B. K. Kilbourne, until April 14, 1950; Dr. S. A. Cooney, until June 19, 1950, and Dr. J. K. Shafer after June 19, 1950.

Action taken in May and June, 1950, by both the State Board of Health and the State Board of Examiners, making possible the recruitment and retention of qualified public health staff, represents the most significant single step taken during the biennium in improving public health services in Montana. Continued support of these actions by all concerned during the next biennium is vital.

Having participated in discussions with you and the Board during the end of the biennium, I have had opportunity to learn of your great interest and support in developing an adequate and highly qualified staff and health program for Montana. I am happy to be able to record here the Board's appreciation of your cooperation and valuable assistance.

Yours sincerely,

G. D. Carlyle Thompson

G. D. CARLYLE THOMPSON, M. D.
Executive Officer

GDCT/nm

STATE BOARD OF HEALTH

July 1, 1948 through June 30, 1949

R. C. Monahan, M. D., President	Butte
Mr. Otto Brackman, Vice-President	Helena
D. T. Berg, M. D.	Helena
*Mr. W. H. Durham	Missoula
C. H. Houtz, M. D.	Havre
**Mr. R. J. Losleben	Malta
R. V. Morledge, M. D.	Billings
Thos. F. Walker, M. D.	Great Falls

B. K. Kilbourne, M. D., Executive Officer

STATE BOARD OF HEALTH

July 1, 1949 through June 30, 1950

E. S. Murphy, M. D., President	Missoula
B. C. Farrand, M. D., Vice-President	Jordan
Mrs. Charlotte Holtz, Secretary	Floweree
W. L. Beal, D. D. S.	Anaconda
Mr. Walter E. Clark	Havre
R. J. McGregor, M. D.	Great Falls
Miss Mary McNelis	Butte

B. K. Kilbourne, M. D., Executive Officer
(March 3, 1946 - April 14, 1950)

S. A. Cooney, M. D., Acting Executive Officer
(April 21, 1950 - June 18, 1950)

J. K. Shafer, M. D., Acting Executive Officer
(June 19, 1950 - August 1, 1950)

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* Appointed January, 1949
** Served until January, 1949

SUMMARY

The basic number one public health problem in Montana continues to be the development of local full-time county and district health departments. Progress in this area is not noticeable during the biennium. As of June 30, 1950, only two counties were served by full-time health departments.

During the two years covered by this report no disease occurred in epidemic proportions, and the incidence of communicable disease was very low in Montana. However, the record shows clearly that continued effort is required in the elimination of preventable disease. In each year one case of smallpox was reported. There were also typhoid fever and diphtheria cases and deaths, yet we know how to prevent these diseases. Poliomyelitis, while not epidemic, had its highest incidence since 1947 and its fifth highest incidence on record.

The over-all death rate was the lowest in the last eight years. The number of live births was the highest recorded, and the live birth rate was the highest except for 1947. The infant death rate and tuberculosis death rate continued downward to an all time low in each year.

During this period, the tuberculosis control program, especially the chest X-ray activity expanded greatly, future development was assured through the purchase of a third mobile X-ray unit. This was purchased jointly by the State Board of Health and the Montana Tuberculosis Association. The Hospital Construction program reached its full development within the amount of available funds. Water pollution, rat control, heart and cancer programs were initiated on a limited scale. The Crippled Children's program was maintained, but many activities suffered because of lack of qualified personnel.

During 1948, the turnover rate for clerical staff was 98% and for the technical and professional staff it was 22%. During 1949, the rates were 69% and 32% respectively. In addition, important posts were continually vacant during this time.

A new State Board of Health was established by the 31st Legislature (1949) and took office July 1, 1949. After careful study, the Board's efforts succeeded in securing approval in May, 1950, by the Board of Examiners of a series of significant new salary ranges for key positions. At the time of the writing of this report, recruitment, appointment and retention of highly qualified staff appears promising for the first time in years.

Following a serious illness, Dr. B. K. Kilbourne resigned as Executive Officer April 14, 1950. He had given thirty-one years of health department service, fifteen of which were in Montana. Dr. S. A. Cooney of Helena, was Acting Executive Officer until June 19, 1950, when Dr. J. K. Shafer, on loan from the U. S. Public Health Service, became Acting Executive Officer. Dr. G. D. Carlyle Thompson was appointed Executive Officer June 20, 1950, to become effective August 1, 1950.

This period is marked by the death of Dr. R. R. Parker in 1949. Dr. Parker is recognized throughout the world for his work as Director of the U. S. Public Health Service Laboratory at Hamilton, Montana, where his role in studying Rocky Mountain Spotted Fever made a great contribution to the welfare of the people. The staff of the Board of Health lost an inspiring friend, leader and co-worker in his passing.

The cooperation of many agencies is acknowledged during this period, in furthering desired legislation and in developing health programs. The role of the Montana Medical Association in sponsoring this State's First Conference of Physicians and Schools in June, 1950, and their active support for establishing adequate salaries for securing Health Department staff is especially noted. The interest, understanding, and strong support of the Governor and the members of the Board of Examiners is greatly appreciated.

DIVISION OF SERVICES FOR CRIPPLED CHILDREN

*Belle C. Richards, M. D., Physician in Charge

There has been a program for crippled children in the State of Montana since 1921 when the Montana Orthopedic Commission was created. The program was expanded and reorganized in 1936 and placed under the State Department of Public Welfare. In 1941 the Division of Services for Crippled Children was transferred to the State Board of Health through legislative enactment.

Because of the lack of qualified staff the program existed under established procedures and was largely carried on with the help of public health nurses and clerical staff during the current biennium.

The Division of Services for Crippled Children administers services for handicapped children to every political subdivision of the State. Orthopedic nursing consultant service is provided by the public health nursing division. This consultant also gives direct service in unorganized areas.

CLINIC SERVICE

Diagnostic clinics are held by an orthopedic surgeon and a pediatrician twice a year throughout the State in fourteen centers. The centers are so located that children from all sections of the State are given access to clinic service both in the spring and autumn.

The local public health nurses and/or the local welfare workers are responsible for the organization of the clinics.

Any child in the State under twenty-one years of age with a crippling handicap can attend the diagnostic clinic for examination. The State agency provides medical and surgical treatment to these children who have defects requiring orthopedic or plastic surgery whose parents are found to be in need of financial assistance. Only those with crippling conditions which can be helped by treatment and whose parents are not financially able to pay for the service are accepted for assistance.

Children are referred to the clinics by local physicians, local public health nurses, welfare departments, and school personnel. The clinics are for diagnostic purposes, but they also provide the means for the supervision and follow-up care of children who have been previously accepted for care.

MEDICAL AND SURGICAL CARE

The Division purchases medical and hospital care on a fee-for-service and per diem basis. Five orthopedic surgeons in the State participate in the program: L. W. Allard, M. D., Billings; J. K. Colman, M. D., Butte; Walter H. Hagen, M. D., Billings; S. L. Odgers, M. D., Butte, and J. C. Wolgamot, M. D., Great Falls. There are three con-

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* Physician in charge from April 1949 to July 31, 1950.
Position vacant July 1, 1948 to April 1, 1949.

sultant pediatricians on the Staff: O. M. Moore, M. D., Helena; D. L. Gillespie, M. D., Butte; E. A. Hagmann, M. D., Billings. In addition other pediatricians, G. W. Nelson, M. D., Billings; F. J. Friden, M. D., Great Falls, and R. W. Clapp, M. D., Butte, attended the field clinics giving physical examinations on a fee-for-service basis. They also give pediatric consultation service to hospital patients.

The four treatment centers for crippled children are Great Falls, Helena, Butte and Billings. Children are sent into the various treatment centers depending upon the area in which they live. The hospitals participating in the program are St. Vincent Hospital, Billings; Billings Deaconess Hospital, Billings; Murray Hospital, Butte; St. James Hospital, Butte; Montana Deaconess Hospital, Great Falls, and Shodair Hospital, Helena.

Number of Children Who Received Crippled Children's Services During Calendar Years 1948 and 1949

SERVICE	1948		1949	
	No. of Children Receiving Service	No. of Visits or Days of Care	No. of Children Receiving Service	No. of Visits or Days of Care
Clinic Service	1275	1638 Visits	1217	1823 Visits
Hospital In-Patient Care	131	7098 Days	124	4264 Days
Convalescent Home Care	——	——	1	134 Days
Physician's Service Outside of Clinics, Hospitals and Convalescent Homes	202	450 Visits	170	318 Visits
Unduplicated Count of Children Who Received One or More of Services Above	1451	——	1706	——

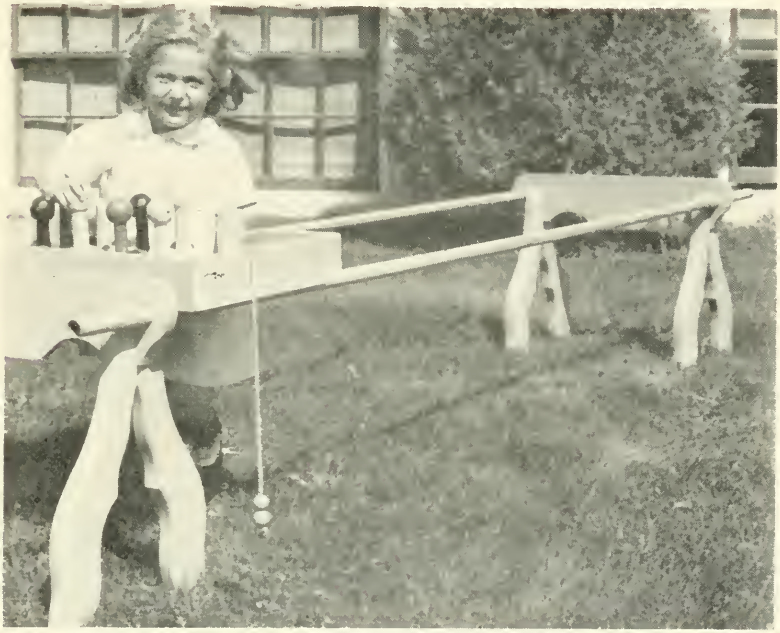
Number of Children on Crippled Children's Register Calendar Years 1948 and 1949

ITEM	1948	1949
On State Register Beginning of Year	3190	3443
Placed on State Register	648	641
Removed from State Register	396	259
On State Register at End of Year	3442	3824

This register has been kept since 1938, and all known physically handicapped children in Montana are listed, although many do not ask to receive service from the Division of Services for Crippled Children.

CEREBRAL PALSY CENTER

The demonstration center for care and training of the cerebral palsied child has been continued during this biennium. This center is located in Billings and since November of 1949 has been expanded to include 13 counties in Southeastern Montana.



Center Demonstrates Equipment for Home Use

Each one of the agencies actively participating in the program has shown complete cooperation. The State Board of Health has supplied the therapists and is charged with the medical aspect of the program. Eastern Montana College has continued to provide the space. The Montana Chapter of the National Society of Crippled Children and Adults is responsible for the education of the children. Each child must have had a diagnosis of cerebral palsy before he is considered for the school. In addition to a diagnosis of cerebral palsy, a complete neurological evaluation and psychological examination to determine educability are made on each child prior to enrollment.

At the school a noon meal is served and a relaxation period is given each child together with morning and afternoon fruit juice. The children have daily appointments with the various therapists. When not engaged in therapy the children are in the class rooms.

Children are accepted on a temporary basis pending further study and evaluation on the basis of progress.

Statistical Report
1948 - 1949

SERVICE	No. of Children		No. of Treatments or Examinations		
	1948	1949	1948	1949	
Total Register	73	69			
Out-Patient Clinic	*	54	*	80	Examinations
Day School	18	21			
Physical Therapy	45	46	1350	1366	Treatments
Speech Therapy	30	26	1428	981	Treatments
Occupational Therapy	**14	30	**125	925	Treatments
Referrals to Mental Hygiene Clinic	14	45	*	71	Examinations
Foster Home Placements	5	3			

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* Not tabulated in 1948.
** Available for only two months.

A few children in other counties in Montana have received treatment and training at Shodair Hospital in Helena. The continuation of the Cerebral Palsy project may account for the increase in the number now known to the Division of Crippled Children's Services. In the calendar year 1948, 73 cases were listed. In 1949, 137 cases were reported.

COOPERATING AGENCIES

The success of a program to help physically handicapped children depends to a large extent upon the cooperation of all agencies interested in the health and welfare of children. Many agencies have worked in close cooperation with the Division in providing services to handicapped children.

DIVISION OF DENTAL HEALTH

F. I. Livingston, D. D. S., Director

The report deals with programs in which decisive action and progress are apparent toward long term objectives, and for which standards have been established for measuring progress.

Increased emphasis has been placed on dental health education, and service programs for children. Dental preventive and control measures function most effectively in the child population; in attaining long term functional dental health objectives.

SCHOOL DENTAL HEALTH PROGRAM

A marked expansion has taken place in the school dental health program; due in large measure to the increased interest in, and understanding of, the dental health program on the part of school administrators and teachers.

Dentists in local areas, and members of the State Council on Dental Health have given generously of their time to work with school personnel, public health nurses, parents, children, and community groups.

Chart ≠1 illustrates the expansion of the school dental health program. The number of children shown on the chart does not represent the total picture; many children who received needed dental attention did not return the Dental Report Card to the classroom teacher. The dental division figures are computed on an impartially applied and strict set of standards to which each Dental Report Card returned to the division is subjected for verification before being included in the figures shown.

Division Report of School Dental Health Program
School Years 1948-1949, 1949-1950

School Year	Participating in Program		Reporting Program Results		Children Reported as Having Received by Close of School Year Dental Examination, and Care When Needed
	Counties	Schools	Counties	Schools	
1948 - 1949	47	650	21	199	9,143
1949 - 1950	51	927	42	516	17,084
Percentage Increase	8.51%	42.61%	100%	159.29%	86.85%

PRESCHOOL DENTAL HEALTH PROGRAM

The large number of blue Preschool Dental Health Cards included in the kindergarten and first grade packets of returned school referral and report cards, provides ample evidence of the integration of the preschool and school dental health programs; children of school enter-

State Board of Health Mobile Dental Unit ing age are enrolled in school with dental defects corrected. Returns for the lower age groups (3 to 5 years) of the preschool population also showed an increase.

SERVICE PROGRAMS

Dental Caries Control and Research Unit

In August 1948, the Dental Caries Control and Research Unit ceased to operate. The Unit had provided urgently needed dental service to children residing in isolated areas of the State. The last station was at Noxon, Sanders County. Chart #2 is an analysis of the report for this station.

Report of the Dental Caries Control and Research Unit
From July 5, 1948 to August 12, 1948

Local Financial Participation	Counties	Unit Stations	Operating Days	Unit Mileage
$425	Sanders (West End)	1	22	285

Type of Service	Examined	No Operative Service Required	Admitted to Service	Discharged from Service	
				Co'pleted	Inco'pleted*
Pupils of Grade School (1-8)	69	11	58	53	5
Preschool**	3	3	3	3	—
High School Emergencies Only	5	—	5	5	—
Adult Emergencies	5	—	5	5	—
Totals	82	14	71	66	5

* One child referred for special services; four children unable to return for minor service required to complete treatment.
** Sodium fluoride therapy provided.

In the one year and a day of operation, from August 11, 1947 to August 12, 1948, the mobile dental unit provided dental service to 762 grade school pupils, 124 high school students, 96 preschool children and emergency care for 19 adults: a total of 1001 patients in 217½ operating days.

It became necessary to discontinue operation of the mobile dental unit because of lack of any regularly provided funds. The dental clinician in charge of the mobile dental unit, working under the necessarily improvised local employment and financing system, found little hope of advancement. On August 15, 1948 he resigned to enter private practice, and no successor has been found. The equipment in the mobile dental unit was returned to the district society of the Montana State Dental Association from which it had been borrowed.

The State Board of Health, in May 1950, purchased equipment for the mobile dental unit. As no dental clinician could be found, the equipment was placed in the Butte clinic, on loan.

Silver Bow County Dental Program

As part of a comprehensive dental health program a dental clinic to provide needed service for 1,000 children opened on June 19, 1950 in Butte, Silver Bow County.

For over three years the district dental society has been studying the problem of providing dental care for the large number of underprivileged children in the area. A special committee was appointed to work with the Director, Division of Dental Health, and Dr. Paul H. Stephens, Chairman, State Council on Dental Health. Several planning conferences were held in Butte during the fall of 1949, and winter and spring of 1950. A Child Dental Health Council was established with representatives from the two school systems, Parent Teacher Association, labor, management, and the welfare department. The Council was kept small, and contacted local organizations in a campaign for community support. The dental society committee participated only in the standards of care and other professional subjects. Sufficient funds were raised to employ an unusually well qualified assistant to supervise the operation of the clinic, and for the purchase of supplies and other incidentals. Adequate office space was donated by the owners of a centrally located building, and several community organizations and groups contributed funds. Twenty-three Butte dentists provide non-remunerated professional service. The clinic is open five days per week.

Park County, City of Livingston

As a result of years of cooperative endeavor on the part of the local dentists, school personnel, and the public health nurse in the school program, a comprehensive dental public health program has been gradually expanded in the school system of the city of Livingston. The number of children with all dental defects corrected has reached a very high percentage in the school population. In such cases it is practical to examine all the school population to determine the number of children who have dental defects, and ascertain the reasons why the defects are left uncorrected.

During the winter of 1949 the Director, Division of Dental Health, worked with a committee appointed by the district dental society. All school children were examined in the private dental offices; it was discovered that out of a school population of 1103, 105 children were not receiving regular dental care. A Dental Health Committee with community representatives was formed, and a planned service program developed. The Women's Club provided financial sponsorship; dental service was provided in the private office on an agreed fee schedule, with the Division of Dental Health providing consultant service.

The school system of Livingston is in top position in the State in the per cent of children having optimum dental health. Populations of two schools show 100% corrections, one school 99.32% corrections, one school 98.62% corrections, and one school shows 95.45% dental corrections.

Services for Crippled Children

Early in 1950 it was possible to put into operation a plan previously approved by the State Board of Health. The plan called for referring selected cases to the Division of Dental Health to arrange for care by accredited dental specialists. Five patients now remain under care of dental specialists following completion of surgery for cleft palate. The Bureau of Vocational Rehabilitation, and other agencies, have cooperated fully in this program.

HOSPITAL DENTAL SERVICES

Montana State Hospital

The Division of Dental Health is responsible by State law for the supervision of all dentists employed by State institutions, municipalities, counties, and school systems. George H. Freeman, M. D., the new Superintendent, Montana State Hospital, is fully cognizant of the modern trends in the care of institutionalized patients. The opportunity was afforded the Director, Division of Dental Health, to reorganize and develop the dental program in Montana State Hospital, an institution for the mentally ill, with an in-patient census of 1,900 and yearly admissions of from 600-700.

A new and enlarged dental suite is being provided in the hospital; additional equipment has been ordered; the dental staff will be enlarged, and the dental program is now being reorganized.

Hospital Facilities

The Director, Division of Hospital Survey and Construction, has continued to work closely with the Director, Division of Dental Health, to incorporate, where feasible, adequate dental facilities in projects for new hospital construction or remodeling. Working with sponsors, architects, hospital administrators, and dental societies it has been possible to incorporate acceptable dental departments in several larger hospitals. In addition to other consultation service the Division of Dental Health, provides equipment lists of recommended equipment, dental department policies and standards, and lecture outlines and materials for hospital and graduate staff. The Hospital Standards Consultant was of great assistance in interpreting hospital dental service, during hospital inspection trips, and collected much information of value in the future planning of the Division of Dental Health.

PROFESSIONAL POSTGRADUATE EDUCATION

Children's Dentistry

In April 1950, six dentists were provided an intensive postgraduate course of ten day duration at the College of Physicians and Surgeons, San Francisco, California. Subjects included were: child psychology, growth and development, management, clinical nutrition, and dentistry for children. Seventeen Montana dentists have taken this course to date; ten more will be sent in the fiscal year 1951.

Cancer Control

Five Montana dentists were sent to Denver, Colorado, to take the course in Oral Cancer Control arranged jointly by the United States Public Health Service, University of Colorado Medical School, Graduate Division, Fitzsimmons General Hospital (Army) and the Division of Dental Health, Colorado Department of Health. Plans call for a continuation of this activity in the fiscal year 1951.

Recipients of both courses are required to lecture and to provide clinical demonstration before district dental societies. The areas from which postgraduate students are appointed are selected on the basis of the needs of the State of Montana. All recipients of these postgraduate courses are enthusiastic over the training received. These training programs assist the State Board of Health to promote oral health activities.

Inservice Training

The Director, Division of Dental Health, attended a four day course in children's dentistry conducted in Billings by nationally recognized authorities. He attended the national convention of the American Dental Association, in San Francisco, California, and the annual three day workshop meeting of the State and Territorial Dental Directors called in Washington, D. C., by the United States Public Health Service. The Director, Division of Dental Health, attended as many State association and district dental society meetings as possible, when special courses were available, and assisted later in the dissemination of the information provided by leading lecturer-clinicians.

DENTAL HEALTH EDUCATION

Dental health education is an integral part of every activity of the Division of Dental Health, and is inherent in every service program. Every opportunity is used to disseminate all factual scientific information made available to protect and promote good dental health.

During the period of this report, the Director, Division of Dental Health, continued to carry on a program of dental health education through lectures at the University, colleges and nursing schools; by working with teachers in training and teachers in service. Workshops, panels, seminars, and other group technics were participated in and utilized whenever possible. Lectures and papers were prepared to aid dentists participating in the programs for local areas. Exhibits were developed, and material provided for exhibition purposes in local areas.

Indirect dental health education was conducted by providing library packets, and literature, to dentists, teachers, and students doing library research projects at Universities and Colleges. A very interesting study was completed by two Montana State University students on teaching methods and materials to be used by teachers in teaching functional dental health education to junior and senior high school students.

Two albums of dental health recordings by Bing Crosby, Bob Hope, Amos 'n Andy, and other radio stars were purchased by the

Division of Dental Health, and have been in constant demand. Two dental films were previewed and purchased for the State Film Library.

Miss Mary Condon, State Superintendent of Public Instruction, and her staff have actively assisted and supported the dental health education program in the schools. The Supervisor, Health, Physical Education and Recreation, Mrs. Jane Duffalo, has consistently worked with the Director, Division of Dental Health, in adapting material for the use of teachers in classroom instruction, and interpreting the dental health program objectives to school administrators and teachers. Other personnel of the Department of Public Instruction who have materially assisted the work of the Division of Dental Health are Mr. Truman Cheney, Supervisor of Vocational Guidance, who has provided direct assistance, and cooperated in working with vocational counsellors to interest high school students in a future career as dental surgeons, or dental hygienists. Mr. K. W. Bergan, Supervisor of Indian Education, has given invaluable counsel and aid to develop the coordination of the U. S. Indian Service dental program with the statewide program of the Division of Dental Health.

INDUSTRIAL DENTAL HEALTH PROGRAMS

The Division of Dental Health has assisted the Division of Industrial Hygiene to protect the health of dental personnel. Service has been made available, and utilized, for the determination of mercury vapor in dental offices and laboratories, and for checking exposure to direct or stray radiations from X-ray machines.

DIVISION OF EPIDEMIOLOGY

*L. J. Lull, M. D., M. P. H.

It is required by Montana law that all persons engaged in the healing arts, householders, and certain responsible school personnel in the State report cases of communicable disease to their local Health Officers. The Health Officers are required to report these cases each week to the State Board of Health, where summarized listings are made and in turn are forwarded to the Surgeon General of the United States Public Health Service, in whose office they become a part of the weekly communicable disease incidence picture for the whole United States.

For both fiscal years under review, the following diseases show marked increases over the two preceding fiscal years: Chickenpox, German Measles, Influenza, Rocky Mountain Spotted Fever, Scarlet Fever, and Tularemia. Diphtheria, Gonorrhea, Measles, Mumps, Pneumonia, Syphilis, Trachoma, Typhoid Fever and Whooping Cough show sharp decreases.

On the basis of the incidence of communicable disease as reported to the State Board of Health since 1920 (see Table I), the following observations are made:

TYPHOID FEVER

Incidence of this disease has decreased steadily over this 30-year period, the total number of cases being less during the period under review than at any time during previous periods. Twelve cases were reported in the 1948-49 fiscal year, and thirteen in the 1949-50 year. This would indicate great strides in the improvement of sanitation throughout the State during this 30-year period.

SMALLPOX

After a two-year period during which no cases were reported, one case occurred during 1948 in Butte, and one during 1949 in Roundup. The decrease in the incidence of smallpox in the State, as in all other states, is a striking example of the widespread use of preventative measures in the control of this disease.

DIPHTHERIA

The period under review has the lowest incidence for this disease for the past 30 years. This is also indicative of the excellent results of the preventative measures which have been taken in this State. After a two-year decline in incidence, this disease reached 102 cases in 1947-48, and dropped sharply to 19 cases in 1948-49 and 30 cases in 1949-50.

ROCKY MOUNTAIN SPOTTED FEVER

This disease has shown an increase during the past two years, rising from a low of 2 cases in 1947-48 to 12 cases in 1948-49 and 10

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* Resigned March 1, 1950.

cases in 1949-50. Despite this increase, it is worthy of mention that during the first six months of 1950, during which 7 cases occurred, no deaths from this disease were recorded. This is probably due to the use of newer antibiotics, used more recently in the treatment of the disease.

TRACHOMA

This disease has continued to decrease, as will be observed in Table II, dropping from 129 cases in 1947-48 to zero cases in 1948-49 and 25 cases in 1949-50.

POLIOMYELITIS

Little increase is shown in this disease for the period under review, with its combined total of 149 cases. During the last 30 years, 1934 was the peak year for poliomyelitis, a total of 321 cases being reported. During the period July 1, 1949, to June 30, 1950, a small predominance of males contracting the disease may be observed, (See Table IV), while in the period July 1, 1948, to June 30, 1949, a slight predominance in female polio cases may be noticed, (See Table III). As in previous periods, the high incidence of poliomyelitis occurs in the 0-9 age group.

TULAREMIA

Incidence of this disease has risen sharply from 6 cases in 1946-47 and 9 cases in 1947-48 to 15 cases in 1948-49 and 46 cases in 1949-50. The Epidemiology Office has cooperated, wherever possible, in supplying information which will assist the U. S. Public Health Service Laboratory at Hamilton, Montana, in its follow-up of these cases, and special studies which it is conducting.

GONORRHEA

The total reported cases for the period under review, (381), shows a decrease of 194 cases below the previous biennium. This is probably not due to the fact that there is a lower incidence of the disease in Montana, but rather due to the widespread use of penicillin, whereby laboratory facilities are rarely used and the patient is treated on the basis of the physician's observation of symptoms and is cured before there is time to make a laboratory examination.

SYPHILIS

A decrease of 382 cases is shown in this biennium compared with the previous biennium. For the first time, statistics on syphilis cases occurring in non-white population have been formulated, and it can be seen from Tables VI and V, that of a total number of 495 syphilis cases reported 1948-49, 154 were non-white. This category is mainly composed of Indians. In Tables VIII and VII, it will be seen that of a total of 291 reported cases during 1949-50, 97 were non-white. These figures would indicate the extremely high incidence of syphilis amongst the Indian population of this State. A preponderance of reported cases of syphilis occurring in males may be observed from Tables VI, V, VIII and VII. A system of tabulating information from positive serology reports, morbidity reports, contact reports, and drug orders, was instituted during the biennium, and a complete history kept on each case.

This system enabled the Epidemiologist to offer consultive service on cases to physicians. This file also eliminates the possibility of the same case being reported more than once.

As in previous years, penicillin and other anti-luetic drugs were provided free of charge to physicians who requested medication for the treatment of indigent syphilitics. A total number of 396 physicians requested such drugs, and these were distributed in the following quantities:

Arsenicals—4,940 doses
Bismuths—4,525 doses
Sulfas—5,000 grams
Penicillin—2,342,100,000 units

These drugs were purchased at a total cost of $5,382.41 to the State. The advances made in treatment schedules during the past few years are well illustrated by the fact that during the last biennium, 15,769 doses of arsenicals, 18,006 doses of bismuth, 1,207,800,000 units of penicillin, and 14,000 grams of sulfa drugs were distributed. Compared with the figures for this biennium, it can be observed how penicillin has replaced arsenicals and bismuths in the treatment of venereal disease cases.

The only venereal disease clinic in the State, which is situated at Great Falls, continues to operate under the able directorship of Dr. H. V. Gibson.

Biologics for immunization and vaccination are furnished to Health Officers at cost-price. It may be observed from Table X that while plain Diphtheria Toxoid is used widely, the combined immunizations of Diphtheria-Tetanus Toxoid, Diphtheria-Pertussis Toxoid, and Diphtheria-Pertussis-Tetanus Toxoid have gained in popularity amongst physicians.

Early in 1950, the Rocky Mountain Spotted Fever vaccine ceased to be distributed free of charge by the U. S. Public Health Service Laboratory in Hamilton, and was produced commercially. It may be noted from Table X that from March, 1950, to June, 1950, 2,560 ccs. of this vaccine were supplied at cost to Health Officers and other agencies.

CANCER

Since the inception of the Cancer Register in 1946, 5,400 cases have been reported by Pathologists, Physicians, Death Certificates and other agencies. A punch-card system, whereby information on each cancer case is coded and tabulated, was instituted during the biennium, and most complete statistical information has been kept, and cancer incidence by site, geographical location, age, sex, color, time intervals, and methods of treatment is in the process of being evaluated. Increased interest by physicians in the cancer studies of the State Board of Health is evidenced by the cooperation received in supplying information and follow-up reports on their cases. Statistics of real value will develop in the cancer picture over a period of time, including the evaluation of the efficacy of various modes of treatment.

An effort has been made to improve the reporting of communicable diseases in the State, and laboratory reports which are positive for tularemia, undulant fever, typhoid, etc. are checked with the attending physician, who is requested to make a report if his clinical diagnosis would indicate existence of the disease.

The Cancer Register Provides Pertinent Information for Study

TABLE I

Record of Certain Important Diseases from 1920 Number of Cases Reported Each Year

Year	Tuberculosis	Typhoid	Diphtheria	Smallpox	Scarlet Fever	Meningitis	Poliomyelitis	Spotted Fever	Measles
1920	863	241	269	1,066	891	19	25	26	4,491
1921	568	187	412	1,466	620	12	26	26	2,561
1922	368	144	426	636	676	23	47	58	67
1923	604	159	456	732	843	21	16	51	2,535
1924	648	130	548	950	1,040	16	182	47	6,049
1925	620	244	329	376	1,337	12	41	34	486
1926	528	117	208	395	2,065	42	12	37	2,596
1927	463	108	182	575	2,209	165	22	38	1,372
1928	448	133	231	853	846	188	65	32	840
1929	536	371	142	547	1,139	149	7	23	4,308
1930	534	120	77	379	1,355	62	20	22	664
1931	579	137	105	129	1,223	31	58	34	1,634
1932	568	142	32	142	868	18	9	100	5,476
1933	465	184	106	33	612	10	13	68	2,178
1934	638	136	178	19	628	22	321	74	2,105
1935	432	81	145	749	1,975	35	7	125	7,397
1936	497	123	85	762	3,579	48	12	65	457
1937	486	96	62	898	1,328	23	31	31	656
1938	515	80	50	314	1,000	17	14	12	3,405
1939	455	57	86	55	1,036	6	6	32	7,498
1940	451	32	117	8	1,044	16	108	32	1,310
1941	466	26	133	4	1,047	10	33	107	951
1942	402	15	86	3	697	12	13	45	3,150
1943	386	23	70	7	690	31	26	28	5,767
1944	508	16	102	12	1,399	42	38	6	3,798
1945	373	45	80	4	698	26	86	2	493
1946-1947	453	23	36	0	271	17	107	7	4,381
1947-1948	701	22	102	0	599	17	37	2	3,749
1948-1949	596	12	19	1	520	13	56	12	3,139
1949-1950	469	13	30	1	422	14	93	10	2.576

TABLE II

Communicable Diseases Reported in Montana Including Deaths from Communicable Diseases Not Previously Reported as Cases

DISEASES	July 1, 1948 to June 30, 1949	July 1, 1949 to June 30, 1950
Chickenpox	2,612	2,775
Diphtheria	19	30
Dysentery, Amoebic	0	2
Dysentery, Bacilliary	2	8
Dysentery, Unclassified	0	1
Encephalitis	5	9
Erysipelas	14	9
Gonorrhea	239	142
Influenza	242	4,950
Measles	3,139	2,576
Measles (German)	1,626	288
Meningitis, Epidemic	13	14
Mumps	706	823
Pneumonia	163	44
Poliomyelitis, Epidemic	56	93
Rocky Mountain Spotted Fever	12	10
Scarlet Fever	520	422
Septic Sore Throat	109	123
Syphilis	495	291
Trachoma	25	0
Tuberculosis	596	469
Tularemia	15	46
Typhoid	12	13
Undulant Fever	8	9
Whooping Cough	180	217

TABLE III

POLIOMYELITIS

By Sex and Age Groups and Month of Onset
July 1, 1948 to June 30, 1949

	0-9		10-19		20-29		30-39		40 and Over		Total
	M	F	M	F	M	F	M	F	M	F	
(1948)											
July	1		2			1					4
August	1	3	1	2	1	1			1		10
September		2	5	1		3	1	1			13
October	4	4	2	2		3					15
November	4				1						5
December		2									2
(1949)											
January				1							1
February											0
March	1	4									5
April											0
May											0
June							1				1
Totals	11	15	10	6	2	8	2	1	1	0	56

TABLE IV

POLIOMYELITIS

By Sex and Age Groups and Month of Onset
July 1, 1949 to June 30, 1950

	0-9		10-19		20-29		30-39		40 and Over		Total
	M	F	M	F	M	F	M	F	M	F	
(1949)											
July	2			3	1		1				7
August	4	4	3	3	6	1			1	1	23
September	12	4	4	4	2		4	2			32
October	5	4	1	1	3	2					16
November	2	1	3				1	1			8
December	1						1				2
(1950)											
January											0
February	1										1
March	1						1			1	3
April											0
May											0
June	1										1
Totals	27	15	11	11	12	3	8	3	1	2	93

TABLE V

SYPHILIS

July 1, 1948 to June 30, 1949
By Color, Age Groups, Sex and Stage of Disease

White

Age Groups	MALE					FEMALE				
	Primary and Secondary	Tertiary	Congenital	Unknown	Total	Primary and Secondary	Tertiary	Congenital	Unknown	Total
0-14			4		4	1	1	4		6
15-24	17	4	1	1	23	6	9			15
25-39	23	22			45	11	45			56
40-59	10	65		1	76	1	37			38
60-Over	1	25			26		5			5
Age Unknown	9	19		1	29	1	16		1	18
Totals	60	135	5	3	203	20	113	4	1	138

TABLE VI

SYPHILIS

July 1, 1948 to June 30, 1949
By Color, Age Groups, Sex and Stage of Disease

Non-White

Age Groups	MALE					FEMALE				
	Primary and Secondary	Tertiary	Congenital	Unknown	Total	Primary and Secondary	Tertiary	Congenital	Unknown	Total
0-14	1		6		7	2		3		5
15-24	7	7	1	1	16	9	16		1	26
25-39	2	10			12	1	28		2	31
40-59	1	12	1	1	15	1	3		1	5
60-Over		2			2		4			4
Age Unknown	1	5		2	8	1	20		2	23
Totals	12	36	8	4	60	14	71	3	6	94

TABLE VII

SYPHILIS

July 1, 1949 to June 30, 1950
By Color, Age Groups, Sex and Stage of Disease

White

	MALE					FEMALE				
Age Groups	Primary and Secondary	Tertiary	Congenital	Unknown	Total	Primary and Secondary	Tertiary	Congenital	Unknown	Total
0-14	0				0			2		2
15-24	8	5			13	2	13	2		17
25-39	4	17	1		22	8	18			26
40-59	7	30	1		38	2	22			24
60-Over	3	19		1	23		5			5
Age Unknown	2	9			11	1	8		4	13
Totals	24	80	2	1	107	13	66	4	4	87

TABLE VIII

SYPHILIS

July 1, 1949 to June 30, 1950
By Color, Age Groups, Sex and Stage of Disease

Non-White

	MALE					FEMALE				
Age Groups	Primary and Secondary	Tertiary	Congenital	Unknown	Total	Primary and Secondary	Tertiary	Congenital	Unknown	Total
0-14			2		2		1	3		4
15-24	3	5			8	3	18	1	1	23
25-39	4	4	1		9	1	16		1	18
40-59	1	12			13	4	4		1	9
60-Over	1	4			5					0
Age Unknown		4		1	5		1			1
Totals	9	29	3	1	42	8	40	4	3	55

TABLE IX

Amount of Various Immunization Materials Distributed By State Board of Health

1948-1949

Month	Smallpox Vaccine	Diphtheria Toxoid	Diphtheria Antitoxin	Pertussis Vaccine	Schick Test	Typhoid Vaccine	Diphtheria Tetanus	Diphtheria Pertussis	Diphtheria Per. Tetanus	Rocky Mt'n Spot'd Fever
July (1948)	60	90		125		20				
August	120	20		175				60		
September	860	1600		50						
October	590	330		175						
November	385	410	240,000	125				20		
December	155	180		125						
January (1949)	385	10	2,000			160		204		
February	345	2830		75	100	200	60	10	60	
March	3405	2100	30	760		20		70	270	
April	705	590		125	10			100	220	
May	320	320		250				160		
June	65	40		25		4		20		
Totals	7395	8520	242,030	2010	110	384	60	660	550	

TABLE X

Amount of Various Immunization Materials Distributed By State Board of Health

1949-1950

Month	Smallpox Vaccine	Diphtheria Toxoid	Diphtheria Antitoxin	Pertussis Vaccine	Schick Test	Typhoid Vaccine	Diphtheria Tetanus	Diphtheria Pertussis	Diphtheria Per. Tetanus	Rocky Mt'n Spot'd Fever
July (1949)	155	20		75				30	60	
August	150	390		225		20				
September	95	250		50		40	1460			
October	315	2550		25			1200	20		
November	345	580		225			50	10		
December	40	280		75				50		
January (1950	55			25	10					
February	50	100					10	10	20	
March	180	200	4000	50			10	20	250	1058
April	655	760		550				80		876
May	380	480		300	20	60		15	45	591
June	165	100		125			20		196	35
Totals	2585	5710	4000	1680	30	120	2750	205	511	2560

TABLE XI

Site of Cancer

Living and Dead Cases Reported to State Cancer Register

	Male	Female
Site Unknown	21	16
Mouth	173	23
Digestive Tract	449	306
Respiratory	163	35
Breast	6	283
Genitals	210	309
Urinary	111	40
Skin	308	173
Endocrine	25	7
Lymphosarcoma	9	4
Other	97	81
TOTAL	1,572	1,277

TABLE XII

Reported Cancer Cases

	Sex	Living	Deaths	Total
July 1, 1948	M	323	77	400
to Jan. 1, 1949	F	249	61	310
Jan. 1, 1949	M	145	159	304
to July 1, 1949	F	142	102	244
July 1, 1949	M	259	207	466
to Jan. 1, 1950	F	239	135	374
Jan. 1, 1950	M	238	163	401
to July 1, 1950	F	234	116	350
TOTAL		1,829	1,020	2,849

TABLE XIII

Time Interval Between Date of First Symptom and Date of First Treatment, Where Data is Available (Since inception of the Cancer Register)

0 - 1 month	404
1 - 3 months	571
3 - 6 months	488
6 - 12 months	379
1 - 2 years	308
2 - 3 years	72
More than 3 years	35
TOTAL	2,257

THE FOOD AND DRUG DIVISION

Elton M. Andrew, M. A., Director

The Food and Drug Division of the State Board of Health functions to protect the health of the people by securing for them as far as possible, foods and drugs that are not adulterated, misbranded, handled, or served under unsanitary conditions. Work which is conducted under authority of the State Food and Drug Act of 1911 is listed as follows:

Cooperating with local, county and reservation health officers in making inspections

Enforcing regulations adopted by the State Board of Health under authority granted to the Board by law

Licensing food handling and food manufacturing establishments as required by law

Revoking licenses of insanitary establishments

Collecting samples of food and drugs for laboratory analysis to determine whether or not they comply with the law.

Prosecuting those found selling illegal foods or drugs or otherwise failing to comply with the Food and Drug law

Cooperating with Federal authorities in the control of interstate shipments of foods and drugs.

In addition to the duties of the Food and Drug Division as concerns actual food and drug work, the division is required to enforce the Montana Mattress Act of 1941, which requires sterilization and disinfection of all second hand materials used in mattresses or bedding, the law also requires the proper labeling and tagging of all mattresses. No additional money has ever been appropriated by the legislature for the additional personnel necessary to enforce this law. As a result, the enforcement has been carried on by mail only, and the department has concerned itself only with proper labeling of products shipped into the State.

The Food and Drug Division is also charged by the Secretary of the State Board of Health with the enforcement of the State Narcotic Act. This act provides for the inspection of pharmacies and hospitals in an effort to determine whether they are keeping adequate records as required by law. The law also requires that narcotics be properly stored in order to protect those handling the narcotics as well as the supply itself. In the biennium of 1940-1942, in cooperation with the State Board of Pharmacy, the Food and Drug Division inspected all pharmacies and hospitals. Since 1942 no inspections of this type have been made. No provision has ever been made in appropriations to the Food and Drug Division for an adequate inspection program as required by law.

The 1945 session of the legislature also enacted two companion bills, one requiring that restaurants employing five or more persons provide proper rest rooms and locker facilities for employees. The companion bill provides that all establishments where employees are required to stand for long periods of time on concrete floors must provide adequate matting protection. It has been impossible to enforce the provisions of this act during the critical shortage period we have experienced during and since the war. Personnel has not been available to make adequate follow-ups on inspections and owners of establishments have not been able to acquire supplies for properly equipping their establishments.

Since 1947 the Food and Drug Division has also had a joint responsibility with the State Experiment Station for the enforcement of an economic poison law. This law is modeled very closely after the act recommended by the Council on State Governments. Since the enactment of the State law, the Federal law has been passed, and the two are almost identical. This law provides for the registration of all economic poisons and describes the manner in which they can be labeled and sold. It also provides for purchase and analysis of samples at the discretion of the Director of the Food and Drug Division. The Director of the Experiment Station has the authority to determine the types of plant and animal life that are to be considered pests and which are controlled by economic poisons. The Director of the Food and Drug Division carries out the actual law enforcement.

The 1947 session of legislature enacted the Locker Plant law. This law provides for supervision of locker plants by the Food and Drug Division of the State Board of Health. It provides that the Board shall make regulations for its enforcement, and also provides for a license fee for locker plants to provide optimum storage conditions, and also provides that such plants shall be kept in a clean and sanitary condition at all times.

INSPECTIONS

In 1940, 1941, and 1942 the Food and Drug Division employed two sanitary inspectors. One of these was permanent and was employed on a yearly basis. The other man was originally entitled a tourist camp inspector. During the war years the temporary man was discontinued, and the program has not been re-instituted since that time. For that reason all inspectional work done from the State level is done by the permanent sanitary inspector and such few inspections as the Director of the division makes from time to time.

The Food and Drug Law provides for the inspection of all food handling and food manufacturing establishments in the State. The law also provides that this inspection work shall be done by local health officers and their agents, and the regulations of the State Board of Health provide that each health officer, or his deputy, shall inspect those establishments within his area at least once each thirty days. The regulations further provide that the State office shall furnish the inspection blanks and score cards to those who do inspection work.

Part time local health officers, generally speaking, do not make inspections as required by the regulations or the law. Part time health officers who must maintain a practice do not have the time nor the inclination to do sanitary inspection work in most instances. It is the opinion of this division that local health officers should not be required to make routine inspections. This work should be done by well trained sanitarians under the supervision of the local health officer. Six counties of the State operate under the city-county health unit plan. In each of these counties there is a well trained full-time sanitarian employed to take care of the general sanitation of the community. It is hoped that within the next year we will have three more counties under this organizational plan. During the past two years the local inspectors, health officers, and State inspectors have made 19,722 inspections. In the past biennium State inspectors have made 9,444 inspections. At no time since 1944 has the State had more than one inspector in the field, and with the addition of county units the department is spending more and more time in rural areas which have no local health officers.

TOURIST CAMP INSPECTIONS

Tourist camp inspections and tourist camp licenses increased during the last biennium. There has been a continuous increase in the number of persons passing through port of entry stations since 1946. These people are largely dependent on hotels and tourist camps for their accommodations. The Director of the division believes that it is time for legislature to pass a new tourist court law. Our present law was enacted in 1927 and was originally designed for camp grounds. The law does not actually include tourist room accommodations, and with the great influx of tourists, local Chambers of Commerce are asking local individuals to rent rooms. These should be supervised and inspected the same as regular tourist accommodations. The division, this year in May, issued a list of all tourist courts operating within the State of Montana and designated their condition by grades. The AA grade denotes the highest type of accommodation available, and a tourist court to obtain this grade must be completely modern. The grade A camp meets all the sanitary requirements of the State Board of Health but does not necessarily have all the modern conveniences. The grade B camp meets all major requirements for sanitation, and the grade C meets the minimum requirements.

The work of inspecting and licensing locker plants has apparently reached its peak, as we are not having any new locker plants constructed in any numbers. This past summer it has come to the attention of the Director of the division that there is a new type of locker plant business entering the State. These are a unit type locker and may be set up in any convenient location, such as a grocery store. No food processing or meat processing is carried on in this type of unit. It will be necessary, however, that they comply with the requirements for locker plants and must maintain the same type of operating temperatures and sanitary conditions.

LICENSES

Since 1921 licenses have been required of all food handling establishments within the State of Montana. These establishments include public eating places, meat markets, manufacturing bakeries, delicatessens, confectioneries, bottling works, canneries, soda fountains, ice cream parlors, soft drink establishments and beer parlors, tourist camps and guest lodges. The licenses required of tourist camps were included in an act passed in 1929. Since July 1, 1947 locker plants have been licensed throughout the State.

Listed below are the number of licenses collected and fees for those licenses over a period of years extending back to the year 1936.

Year	Food Licenses	Camp Licenses	Locker Plant Licenses	Fees Collected
1936	5,116	322		$10,876
1938	5,413	480		11,786
1940	5,773	558		12,662
1942	5,405	460		11,730
1944	4,409	341		9,500
1946	5,163	475		11,276
1947	6,016	574	103	13,695
1948	6,492	666	210	16,366
1949	6,865	752	245	16,441
1950	6,046	757	224	15,846

The figures given for 1950 are not complete due to the fact that some licenses will be issued before December 31. The next biennial report will show the complete figures for 1950.

Licenses issued by the State Board of Health are primarily regulatory. Under the law an establishment operating in an insanitary or unsatisfactory manner may have its license revoked and the establishment ordered to be closed until such time as it is placed in good condition. The State Board of Health attempted to use this authority only as a last resort and only if the operator of the establishment has been warned of the insanitary conditions and given ample time in which to correct them.

By devising an inspection form which can be carried by the sanitary inspector, the inspector is able to look back to former inspections and check to see what improvements have been made. Any letters or recommendations prescribed for insanitary establishments are attached to these inspections in order that the inspector may refresh his memory. It has been found that this system has been quite satisfactory and has resulted in considerable improvement.

FOOD ESTABLISHMENT SANITATION

It is fundamental that any establishment operating to manufacture or dispense foods or beverages must have good water, fly-tight toilet facilities, and adequate, prompt disposal of garbage. It is also necessary that all work areas, store rooms, and utensils be kept in good condition and adequate refrigeration be provided for spoilable foods in the amounts usually kept on hand. Personal cleanliness of those engaged in the preparation, distribution and sale of foods is also very important.

Probably one of the greatest hazards with which we have to contend in this present day and age is the improperly washed glass, knife, fork, spoon, or other utensil with which the mouth may come in contact during eating or drinking. Such improperly washed utensils can be responsible in part for the spread of many diseases.

At the Fall meeting of the State Board of Health in 1947, the old regulations concerning food handling establishments, particularly eating and drinking establishments, were repealed, and seventeen new regulations enacted. These new regulations conform to the regulations and requirements of the standard code and ordinance set up by the United States Public Health Service. These seventeen new regulations replaced over thirty of the old regulations, leading to simplifications and providing for rapid and detailed inspections. As a result of these new regulations, a new inspection form was devised to be used in conjunction with them. This form has now been sent to sanitary State inspectors. The new inspection forms also provide in their make-up for grading of establishments where local ordinance permits.

The sanitary condition of the food handling establishments in this State is probably comparable to other rural states in this area. In those areas where local sanitarians are employed on a full time basis eating and drinking establishments generally are in a much better condition than in the State at large.

LABORATORY

In the last biennial report, the laboratory report included samples run between the dates of November 1, 1946 and July 1, 1948. In this report work completed in the laboratory from July 1, 1948 to July 1, 1950 is shown. In that length of time the laboratory has analyzed a total of 2,172 samples. Of these 1,962 samples were analyzed for the Dairy Division of the Department of Agriculture. The law governing the manufacture of dairy products states generally that the Department of Agriculture may request the chemist of the State Board of Health to do their analytical work. This program has been carried on for many years, and has increased from year to year. The following list shows the types of analyses made on dairy products.

Butterfat	
Butter	7
Cheese	53
Ice Cream	48
Yeast and Mold	
Butter	286
Cream	3
Total Solids	
Cheese	16
Ice Cream	33
Bacterial Counts	
Butter	286
Cream	3
Ice Cream	1419
Sediment	
Cheese	26
Tests for Adulteration With Oleomargarine	
Butter	33
Ice Cream	4

One sample of butter was tested for poisonous material. It was later determined that the contaminant was silver nitrate. It was never determined where this contaminant entered into the manufacturing process. One sample of ice cream was analyzed to determine pasteurization process, and one sample of ice cream was checked for acidity. Some special work was also done for the Dairy Division on products which did not conform to the butterfat standards as prescribed by State law. These results were turned over to the Dairy Division and it is understood that there is a court case pending on these.

The laboratory also analyzed meat samples during the last biennium, of which 129 were hamburger; 6, frankfurters, and 17, sausage. These samples were tested for fat content, moisture, preservative, and cereal adulteration.

The laboratory, in recent years, has done some work in the field of toxicology. There was a demand from doctors and law enforcement officers for this service, and this laboratory seemed to be the only one in the State that was available. The number of samples analyzed in the laboratory last year increased from those of the previous biennium. The laboratory received and analyzed stomach contents as follows:

1 sample for arsenic, strychnine, and barbituric acid
3 samples for barbituric acid
1 sample for strychnine
1 sample for alcohol content
1 sample for alkaloids

Three blood samples were analyzed, one for barbital, one for cyanide and ether, and one for alcohol content. One sample of liver and kidneys was checked for cyanide. Various types of medicines were checked in the laboratory for toxicological reasons. One sample was checked for the presence of marihuana, or other alkaloids, and one for barbiturates and codeine. One sample of tablets was submitted and checked for strychnine, and one sample of the same type was checked for identification and was found to be glyceryl trinitrate. One sample of cough drops was analyzed for the presence of suspected poison. One sample of urine was analyzed for the presence of alkaloids. Three samples of tobacco were analyzed for marihuana. One sample of coffee and one of Postum were checked for suspected poisons. Two unknown samples of liquid were analyzed for purposes of identification. Both of these were identified as liquor, or whiskey of some type. One unknown sample of liquor was analyzed for the presence of barbital and codeine. One sample of urine and one sample of whiskey were also analyzed for the purpose of determining whether any poisonous materials were contained. Four samples of whiskey were analyzed for the Liquor Control Board of Montana for purity and conformity with State and Federal liquor laws. Other samples tested included two samples of ham which were checked by the Hygienic Laboratory for the presence of bacteria. Two samples of apples were checked for the Department of Horticulture for spray residues. Two samples of sweet corn, and two samples of grapefruit and orange slices were checked for adulteration with foreign substances. Two samples of prepared whipped cream mix were checked for bacteria, yeast and mold, total solids, and butterfat. Eight samples of egg whites were checked for total solids and moisture. Bacteria counts were run on seven batches of soft drinks.

The Food and Drug Law provides for the sampling of food products and their analyses by the Food and Drug Division. Little of this work has been done in recent years. This is largely due to the fact that with limited personnel and limited space, there was not sufficient time to do a good sampling program. There is one chemist employed full time in the laboratory, and the bulk of his time is spent in running water samples, and in doing work for other State departments. It should also be mentioned here that the high cost of sampling and the lack of sufficient appropriations for sampling precludes the possibility of any but spot checking programs.

Since July, 1948, 736 samples of water were run for chemical analyses. This work was done for the Sanitary Engineering Division of the State Board of Health. Further information concerning these water samples will be found in the report from the Sanitary Engineering Division.

SPECIAL INVESTIGATIONS

On July 22, 1948 the Director of the Division accompanied the local inspector for Lewis and Clark County on a special inspection of the Canyon Ferry project east of Helena. This was done partly at the request of the Reclamation Service and also in order that the Division could lay plans for any future program caused by any excessive development in the area. One investigation was conducted in Butte in September, 1948 concerning illegal drug sales. Two investigations were made in the city of Billings for the purpose of aiding in the establishment of a modern trailer court in that city. The Director of the Division, in company with the city engineer of Billings, on March 31 investigated the diversion of Alkali Creek past this trailer court. On April 29, in company with Mr. Henry Garber of the Sanitary Engineering Division, a re-survey was made of this area. Because of the impossibility of establishing a proper sewage disposal system in this area, this trailer court has not been built. From December 12 through December 17, the Director of the Division, at the request of Billings Health Department, worked with Mr. William Reinhart, Sanitarian for the city, on the inspection of cafes. All cafes in the city were inspected and specific recommendations prepared for the mayor and local health department and the cafe operators in an effort to bring all eating establishments up to the requirements of the Board of Health. On December 15 a meeting was held in the City Hall with restaurant operators and an explanation was made to them of the operation of a food handlers' school and food handlers' training program. A meeting was also held with restaurant equipment supply houses in an effort to get them to recommend to new operators the proper methods of installing equipment. Copies of the Sanitary Code were provided to these supply houses in order that they might properly instruct their salesmen or field representatives in the recommended types of equipment.

SPECIAL ACTIVITIES

While an inspector of the Food and Drug Division is in the field many requests are made for him to talk to local groups of people concerning the sanitary conditions of the community, and to inform them as to good sanitary procedures. Mr. Howard Morton, field representative of the division, made seven such appearances in the last biennium. These appearances were made before local Chambers of Commerce, 4-H Clubs, and local health councils. Local inspectors are also called upon to make many of these appearances within their own communities. In the Gallatin County unit, for example, Mr. Lester Groom, the local sanitarian, talks to groups of college students and lectures to classes in Community Health and Hygiene at the request of the college instructors. Many visits are made to local health offices by groups of persons interested in Public Health work. In one health office, seven such groups visited the sanitarian in one month's time.

The Director of the Food and Drug Division made many public appearances in the last biennium, and these appearances become more frequent from year to year, due to a great extent to activities in public health education. There are many local health councils organized in the State, and these local health councils ask for aid and advice from department heads. In an effort to show the demand for such services, the following is a summary of appearances made by the Director of the Division before various groups.

Adult Education Plays an Important Role in Sanitation

Talks were given to ten groups of college students. Three of these were at Eastern Montana College of Education, and seven at Montana State College. Two talks were made to nurses' groups, eleven before county commissioners and health councils, and two at public health meetings. One of these was an extension class in health education. Five appearances were made before industry groups as follows:

Montana Bakers Association
Montana Bottlers of Carbonated Beverages
Montana Frozen Food Locker Association

One lecture was given at a special adult training class at Montana State College for beauty operators, and a talk was given before the Hairdressers' Association convention. Four talks were given before civic groups and one over the radio. The Director of the Food and Drug Division also appeared before the Safety Engineers of the Reclamation Service. One Food Handlers' School was held and one appearance was made before restaurant operators in Billings. In addition, the Director of the Division was required to testify at a District Court proceeding in Fort Benton as the result of an analysis made in the laboratory.

On May 2, 1950 the Director of the Division conducted a class from the laboratory school of the Eastern Montana College of Education through the Ideal Bakery of Billings.

In June 1950, meetings were held with the Mayor of Butte concerning a sanitary inspection program for that city and with the Mayor and Comptroller of Billings concerning a combined city-county sanitary inspection program for Billings and Yellowstone County. Also, a special investigation was made of the 7-Up Bottling Works in Butte in March 1949.

The Director attended the Western States Food and Drug Officials' meeting in Salt Lake City in 1948, and a similar meeting at Reno, Nevada on September 5, 1949, when he was given the honor of being elected President of that association. He also attended a meeting of the Montana Agricultural Chemists' Association at Bozeman, and the Montana Public Health Association meeting in Billings.

PERSONNEL

Mathew Klein, Senior Chemist, and Howard J. Morton, Sanitary Inspector, have been employed during the biennium. In addition to this permanent technical personnel the Food and Drug Division included Charles Watkins, who was employed as a part-time Junior Chemist from June through September 13, 1948. From June through September 13, 1949, and also during the summer months of 1950, Brandon McMahon was employed as Junior Chemist.

Credit should be given to local sanitary inspectors who have helped with the work of the division, although they were employed with the city-county units. They are: Charles F. Fahrenbach of Missoula, who was replaced by Cyril Brauch in the summer of 1950; Lester Groom, Bozeman; William Shea, Great Falls; Harry M. Ramsey, Lewistown; John Dolan, Helena; William Reinhart, Billings; Robert Sherman, Butte; John Cunningham, Miles City.

It should be mentioned here, also, that two or more counties have agreed to employ full time sanitarians. These two counties are Blaine and Richland, and the positions will be filled as soon as qualified personnel are available. The agreement for the Blaine County unit was made prior to July 1, 1950, and Richland County shortly after July 1, 1950. It is hoped that a unit will also be established in Flathead County this coming year.

RECOMMENDATIONS

As noted in the previous biennial report, more clerical help can be used in the work of the division, and until such time as more sanitarians are available in local units, the division should have at least one more full time sanitarian. Also, if the Food and Drug law is to be properly enforced, an additional chemist should be made available.

It is hoped that with the new budget, the department will be able to send some local men to the training courses in the field of sanitation. The Sanitary Inspector of this division attended a twelve weeks course held in Denver from March through May, 1950.

As was pointed out in the previous biennium, it is the feeling of the Director of this Division, together with the Director of the Sanitary Engineering Division, that the laboratory work could be handled on a more economical basis if the laboratory set-up was organized. The work of the two divisions requires laboratory facilities.

Certain requirements of the Food and Drug law make necessary the establishment of chemical laboratory facilities by the Board of Health wherein testing may be carried on. This testing is for the purpose of determining compliance with the labeling and adulteration provisions of this act. Such laboratory facilities are maintained at the present time. However, as previously stated, due to the large volume of work being done for other divisions and for other State departments, the actual Food and Drug laboratory work has been below the minimum necessary, as required by law. More money must be made available for sampling purposes, and additional personnel should be made available. It is felt that if all chemical activities are combined in one chemical laboratory, excessive costs and duplication of chemicals and personnel can be largely eliminated. Additional space should be allocated to this laboratory in order that part-time personnel presently employed in other capacities, can aid in the laboratory work. By combining various field activities of the two divisions, it is believed that some duplication of travel, and the expenses involved in travel, could be eliminated. Local sanitary inspectors would be under the joint supervision of the Directors of the two divisions and would also be available when needed by the Industrial Hygiene Division. In cases requiring State investigations, these local inspectors would be deputized, and would act as agents of the State Board of Health. By operating in this fashion, as was noted in the previous biennial report, a certain amount of confusion could be avoided, and the work could be carried on within the framework presently established. In the previous biennial report, mention was made of the efforts of the Director of the Division toward the establishment of a laboratory building for the State of Montana. During the legislative session of 1949, the Director of the Division and Mr. Gagle, Materials Testing Engineer of the Highway Commission, obtained sponsorship and aided in the passage of Senate Bill No. 122. This bill provides a legal means by which the State can accept aid from private individuals, the Federal government, or any other source, in carrying out-of-State programs generally. It was felt that certain Federal funds, or private funds, might be made available to aid in the building of the laboratory building, and in order not to have to pass special legislation in the case of each such grant, Bill No. 122 was passed and will enable the Board of Examiners to accept such grants without special legislation.

As was mentioned under the tourist camp work, it is our belief that the State should enact a new tourist court law, or at least some type of law which will cover all types of tourist accommodations in the State. Such a bill was prepared for examination during the last session of the legislature, but was not introduced.

As had been recommended in every previous biennial report, a new Food and Drug law should be enacted in this State. This law should be patterned after the model Food and Drug Cosmetic Act, as recommended by the National Association of the Food and Drug Officials. During the 1949 session such a bill was introduced. It was sponsored by Senator Gosman of Beaverhead County, Senator Padbury of Lewis and Clark County, Senator Phillips of Phillips County. The Director of the Division appeared before the Senate committee on two different occasions and also conferred with Senator Brown of Prairie County, and also with the Attorney General of the State on the legislation. Some amendments should also be made to the Locker Plant Law of the State. These amendments, however, should be made with the joint cooperation of the Livestock Commission and the Locker Plant Association. The Director appeared before the Agriculture committee of the House of Representatives on two occasions during the last session of legislature on proposed amendments which were not considered satisfactory.

The Food and Drug Division gratefully appreciates all cooperation from all divisions of the Board of Health, from local health units, and State agencies which have helped so materially with the work of this division.

DIVISION OF INDUSTRIAL HYGIENE

A. Wallach, M. S., Director

The following are the major activities of the Division of Industrial Hygiene:

Makes available medical, nursing, engineering, and chemical consultation on industrial hygiene problems to labor, management and medical profession

Investigates occupational diseases reported and makes studies to eliminate or control their occurrence

Makes studies of industrial establishments throughout the State to determine whether processes or conditions may be detrimental to employees' health

Reports findings of such studies to management and makes recommendations for the elimination or control of health hazards uncovered

Consults on design of industrial ventilation systems and other engineering methods for control of health hazards

Maintains a laboratory service to analyze (for toxicity) air samples taken in plants or materials used industrially

Serves as a clearing house for information on industrial health subjects.

During this fiscal period, a number of valuable pieces of equipment were obtained to aid in both field and laboratory work. In the laboratory, the polarograph, an instrument for determining very small quantities of many toxic substances, was found very useful in obtaining more accurate results with much less time. A combination electrometric titrimeter and pH meter was also obtained. This has been useful for rapid and accurate work in acid, alkali and pH determinations and will be of great value in future work. In addition, a new water distillation apparatus was obtained to replace the former one which was ten years old.

Among the new field equipment obtained is the gamma, beta radiation meter for measuring exposure to these harmful rays. It has already found much use in studies of stray radiation from fluoroscopic shoe-fitting machines as well as from radiological equipment in clinics, and no doubt will be very valuable if uranium will continue to be mined in the State. A mercury vapor detector, a detector for carbon monoxide in blood and an instantaneous reading laboratory flow meter were among other field equipment purchased during this period.

Because of these recent purchases, our industrial hygiene unit is among the best equipped in the Rocky Mountain area and rates well with any other state industrial hygiene unit in the country.

During this two-year period, the Industrial Health Committee of the Montana Medical Association was reactivated, with its chairman serving on the Industrial Hygiene Advisory Board. The State Dental Society was also represented on the Advisory Board. However, the individual designated had to resign, since he is at present the dental representative on the State Board of Health. This vacancy has not yet been filled.

The number of personnel in the Division has remained the same, except that the turnover in stenographic help was serious—three people for one job in a two-year period.

FIELD ACTIVITIES

A total of thirty-five plants were serviced, covering approximately 11,300 workers. Of these studies, requests accounted for nearly two-thirds of the work. Management was the source of 63%, labor 18%, the Industrial Accident Board 14%, and county health units the other 5% of this request work.

Types of industries covered ranged from dam building, smelters, cement plants and oil refineries to bakeries, beauty shops and dry cleaning establishments.

The following are illustrative of the activities of the Division's field activities:

Control of radiant heat from furnaces at a smelter
Assistance with exhaust system in tunnel for a railroad
Check of mercury vapor concentration in an oil refinery laboratory

Determine the source of carbon monoxide complaints from office workers in a large garage, so that remedial measures could be taken

Evaluate the exhaust system in the laboratory of the chemistry building at one of the State colleges, and make suggestions for its improvement

Investigate the cause of a large number of dermatitis cases in an asphalt pipe coating operation. Studies showed that the problem was due to the photosensitizing action of the asphalt fumes and excessive sunlight, and what was needed was a protective cream to screen out the ultra-violet rays

Check of fluoroscopic shoe-fitting machines for excessive radiation.

A significant portion of time was spent in the study of 350 workers exposed to an acid mist. Part of this study consisted of checking the "home made" gauze respirator used by these workers. Although this was not of an approved type, it was found to have a filtering efficiency of 85 to 95 per cent. In addition, the device had practically no noticeable resistance to breathing and minimized (if not eliminated) the dermatitis problem caused by the standard respirator for acid mist. Because of the value of such information, not only for exposure to acid mist, but for other particulate contaminants which act primarily in proportion to their mass, an invitation to present a paper on these findings at its 1950 meeting was extended to the Division by the Industrial Hygiene Section of the American Public Health Association.

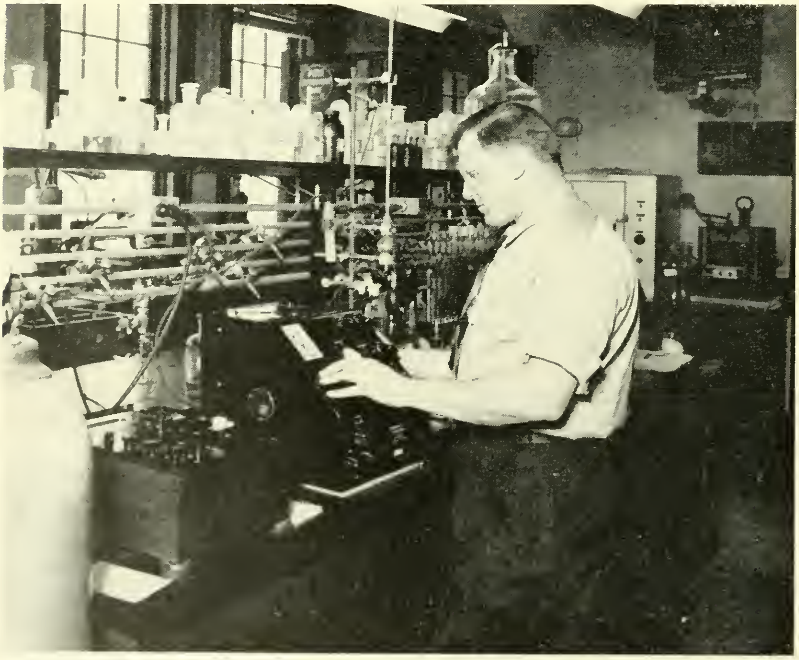
The other part of work on this acid mist problem was to cooperate with the company in determining whether through the use of wetting agents, the mist concentration could be effectively reduced. The results appear promising.

LABORATORY AND FIELD ANALYSIS

The total of 1163 chemical analyses were made in the laboratory on air, urine, water and dust samples. Four hundred fifteen determinations of atmospheric contaminants or physical conditions were made by direct reading instruments in the field.

In addition, determinations were made in developing improved methods for analyzing hydrogen sulfide and sulfur dioxide in air and for standardizing a method for determining chlorine in air at the request of the National Conference of Governmental Industrial Hygienists. The laboratory also ran samples in acting as a collaborator for methods of analyses of lead and manganese in cooperation with the National Conference of Governmental Industrial Hygienists.

A detailed breakdown of the chemical analyses and field determinations is presented below.



Industrial Hygiene Laboratory

Summary of Laboratory and Field Analyses

Materials Analyzed	No. of Analyses	Materials Analyzed	No. of Analyses
Acid	336	Illumination	4
Air Velocity	250	Lead	18
Arsenic	3	Mercury	20
Ash	2	Methane	33
Carbon	2	Nitrogen	46
Carbon Dioxide	46	Oxygen	46
Carbon Monoxide	47	Silica	2
Chlorinated Hydrocarbons	2	Specific Gravity	9
Coal Dust	9	Temperature	8
Other Dust	6	Zinc	603
Humidity	8	X-Ray	78

CONSULTATIONS, OFFICE INQUIRIES

A total of 28 inquiries came into the office from varied sources. From management came requests for information on health hazards from or control measures for exposures to contaminants like carbon tetrachloride, arsine, carbon monoxide, cadmium, copper, indium, etc. Methods for collecting and analyzing toxic substances (lead, hydrogen sulfide) were given to representatives of management upon request.

Some members of the medical profession requested aid on dermatitis problems, proper type protective creams for particular exposures, cuts exposed to beryllium and insecticides. A number of urine samples were run for lead and arsenic to assist doctors in the diagnosis of possible occupational diseases. In one case samples of urine and drinking water were analyzed for lead to assist in the diagnosis of an ill child.

Representatives from labor on several occasions inquired on various industrial health matters, especially silicosis and related problems. A safety inspector from the Industrial Accident Board desired consultation on the evaluation of a wet-seed treating machine as to its effectiveness in reducing mercury vapors and dusts.

EDUCATIONAL ACTIVITY

Talks

A number of talks on various phases of industrial health were presented before different groups. "Hygiene in Metal Mines" was given before the first annual meeting of the Montana Safety Council. After the paper was abstracted in a National Safety Council bulletin, 47 copies were sent out as a result of requests. A talk on the activities and services of the Division was given before the Billings Commercial Club. This resulted in several requests from management for industrial hygiene studies.

Other groups before which presentations were given were student nurses, a union local, a district council of dentists, county extension agents, farm leaders, etc. With the aid of Dr. R. B. Richardson, Chairman of the Industrial Health Committee of the Montana Medical Association, arrangements were made to have two papers on industrial health given by the nationally known figure, Dr. Robert A. Kehoe of the Kettering Laboratory of Applied Physiology, at the Rocky Mountain Medical Conference held at Butte in 1949. Arrangements were also made for Mr. Henry Doyle, U. S. Public Health Service consultant, to present a talk on industrial hygiene and its financial value to industry before the second annual meeting of the Montana Safety Council.

Classes

A two credit hour course on industrial health engineering for 15 students was given at the School of Engineering at Bozeman in 1949. In the same year, a 10-hour unaccredited course on industrial hygiene was made compulsory for all senior students at the Montana School of Mines. These courses had definite value, for the students taking them will be the plant foremen and managers of tomorrow. Unfortunately, these courses could not be held in 1950, despite the desire of the president of the School of Mines at Butte and the dean of the Engineering School at Bozeman to have them repeated, because of lack of time and personnel.

A 3-hour lecture on industrial hygiene was given before 25 people in a 30-hour class on industrial safety sponsored by the Industrial Accident Board. Present at this class were the labor inspectors of the Industrial Accident Board, safety engineers and other representatives from management, and trade union representatives. One immediate result of this talk was the request to make a study of one of the largest lumber companies in the State.

Publications

An article on the "Sampling and Determination of Chlorine in Air" was published in the American Industrial Hygiene Association Quarterly. A number of reprints were requested by various agencies and organizations active in industrial hygiene. This Division also had an article published in Analytical Chemistry on "Polarographic Determinations of Zinc in Small Quantities." Reprints of this were requested not only by industrial hygienists, but by pharmaceutical and biological organizations as well, some of these requests coming from places as far as Switzerland, South America and Canada. In conjunction with a senior student at Carroll College, work was done on a simplified method for the determination of hydrogen sulfide in air. This work was presented at the 1950 meeting of the Montana Academy of Science.

Through the assistance of Dr. R. B. Richardson, the medical member of the advisory board, two articles were printed in the State Medical Society Bulletin on the activities and services of the Industrial Hygiene Division as related to the medical profession. As a result of these two articles, several inquiries and consultations on specific industrial health problems came in from doctors. An article, with photographs showing good control measures and proper industrial hygiene practices in Montana, was prepared for the State Chamber of Commerce. This illustrated article, which explains to management the services and activities of the Division, will be printed in the first issue of the Chamber's new magazine.

An article showing a fool-proof safety device, which was first used in Montana, for preventing solvent vapors in dry cleaning work from escaping into the workroom received attention in the Industrial Hygiene Newsletter. Eighty copies of that particular issue of the Newsletter were sent out to the larger dry cleaning establishments in the State.

Meetings

Both of the technical personnel attended the annual joint meetings of the American Conference of Governmental Industrial Hygienists and the American Industrial Hygiene Association in 1949 and 1950. The director attended both meetings of the Montana Safety Council and participated in the planning of that part of the program dealing with industrial hygiene.

SPECIAL ACTIVITIES

A statistical study was made of cancer deaths reported in six counties (five of them industrial) for 1947 and 1948, with special attention to per cent of respiratory cancer to all cancer deaths. The figures are shown below.

Per Cent of Respiratory to All Cancer Cases Reported in 1947-48

Cascade		Deer Lodge		Gallatin		Missoula		Silver Bow		Yellowstone	
M	F	M	F	M	F	M	F	M	F	M	F
12.7	3.5	30.8	6.1	0	0	10.7	0	22.6	1.5	7.1	3.3

Although the data were not complete, they may have statistical significance, according to Dr. W. C. Hueper of Environmental Cancer Studies in the National Institute of Health. He visited the Division and went over a projected detailed study, offering possible financial aid for such work.

The higher percent for males as compared to females is indicative of occupational causes. The cause for the higher rates in Deer Lodge and Silver Bow counties may be indicative of exposure to excessive amounts of arsenic dust and fumes. The higher rates in Yellowstone County may be largely due to contaminants in the air from the oil industry. Gallatin County was used as a control group, because the population is composed of farmers and university personnel.

During the latter part of this fiscal period, a written agreement was entered into with the Industrial Accident Board to clarify working relationships between the Industrial Hygiene Division, which is responsible for industrial health and occupation disease control, and the Industrial Accident Board, which is responsible for preventing mechanical accidents and injuries. Through this agreement there will be a minimum of overlapping of activities as well as more effective use of government personnel. In addition, the possibility of working at cross-purposes between the two agencies, which has occurred in other states, will be eliminated.

Since the coal mine disaster in Bear Creek of 1943, in which 73 people were killed, the Industrial Hygiene Division has been doing analyses of air and rock dust in the coal mines collected by the coal mine inspector. Proper sampling procedures were gone over with the inspector, so that there would be more correct evaluation of any explosion hazards in the mines.

A conference was held with the secretary of the Montana Beauticians Association regarding potential health problems in handling cold wave preparations and how the Association could make use of the service of the Division. As a result of this, several requests from beauty operators who were troubled with dermatitis came into the office.

A week's training was given to the new industrial hygienist of the Anaconda Copper Mining Company plant in Great Falls, a meeting was held with the state supervisor of school transportation on the availability of carbon monoxide indicators for checking the school busses in the wintertime, and conferences were held with various responsible people in the State Aeronautics Commission and the Agricultural Extension Service regarding the safe handling of economic poisons and insecticides. Press releases on potential health hazards from fluoroscopic shoe-fitting machines resulted in six shoe stores throughout the State requesting checks of their machines for stray radiation. Work of this nature was also done in other stores of the larger cities having such shoe-fitting machines.

Closer working relations were made with Dr. Arthur J. N. Johnson, head of the Physics Department at Bozeman, who has been working on civilian defense from radioactive weapons.

Working relationships with local sanitarians in Great Falls, Miles City, Billings, and Missoula were initiated. This included explanation of the activities, equipment and services of the Division, as well as assisting them on specific problems.

OCCUPATIONAL DISEASE REPORTING

In line with the biennial report of 1947-48, further statistical work was done on the silicosis cases coming to the attention of this Division through the Tuberculosis Sanitarium at Galen and the Department of Public Welfare. A preliminary analysis shows that the number of new cases of third stage (completely disabled) silicotics has not changed appreciably during the past seven years. It also shows that a very significant percentage of these cases have either worked all the time in Montana, or their work history outside the State was less than five years with little or no silica dust exposure. What is needed now is to complete the statistical study and pick those mines in which known silicotics worked, so that field studies can be made to determine what, if any, corrective measures should be taken at these places.

Three cases of lead poisoning were reported to the Division by doctors. In addition, the Division was informed of about twenty lead intoxication cases which occurred during a short period of time in one of the plants.

Thirty-eight dermatitis cases in bakeries, among beauticians, and asphalt coating plant workers were also reported. Two carbon monoxide cases were brought to the attention of the Division.

RECOMMENDATIONS AND PLANS

More than 90% of the field work is done by the Director. Because of recent promotional activities before labor and management groups, request work alone has kept him occupied most of the time. This has prevented the carrying out of a planned program such as checking those mines indicated by the silicosis data, studies of oil refineries and fields, work at the lead smelter to minimize intoxication incidence, the new phosphorus plant at Silver Bow which plans to hire from 500 to 1,000 people, the proposed aluminum plant at Hungry Horse, etc.

In order to do the above and make a check study of each industrial establishment of 25 or more workers at least once every three years, a minimum of two additional engineers will be needed.

It is planned to cooperate with the cancer control program in obtaining financial assistance from the Cancer Control branch of the National Institute of Health, so that the detailed study (see section on Special Activities) discussed with Dr. Hueper can be made.

The sanitarians of the city and county health units, as well as the inspectors of the Industrial Accident Board, frequently come across health problems and new operations or plants. It is planned to develop a 20-hour course on industrial hygiene problems, methods, and equipment to be given for these individuals under the sponsorship of the State Board of Health. In this way, they will better learn to recognize industrial health hazards and know what services are available to make checks into such potential hazards.

STATISTICAL SUMMARY OF INDUSTRIAL HYGIENE ACTIVITIES

Plant Activities

Total number of different plants serviced	35
Total number of workers covered by services	11,299
Total number of plant visits made	77

Source of Service

Self-initiated	13
Requests from management, labor, private physicians, etc.	22

General Type of Service Given	**No. of Services**
Introductory, routine	8
Plant surveys	5
Technical studies of hazards	28
Other environmental services	1
Investigation of occupational diseases	5
Follow-up on recommendations	7
Miscellaneous services	2
Total	56

Recommendations	**Made**	**Carried Out**
Number of recommendations	31	5
Number of plants involved	20	5
Number of workers affected	3042	2645

Specific Services

Number of laboratory analyses and examinations	1163
Field determinations of atmospheric contaminants	145
Field determinations of physical conditions	270
Occupational diseases investigated	5
Office inquiries on industrial health	28
Miscellaneous	2

Other Activities

Professional meetings attended	9
Lectures and talks given (Attendance—450)	34
Publications	4
Professional conferences	30
Literature distributed	1057

DIVISION OF HOSPITAL SURVEY AND CONSTRUCTION

Robert J. Munzenrider, B. S., Director

The previous report of the Division pertained to enabling legislation for a hospital survey and construction program and the development of the Montana State Plan for Hospital Construction. The hospital construction program, during the period covered by the present report, has developed from the planning stage into the "brick and mortar stage."

The hospital construction program has stimulated intense community interest in the provision of adequate hospital facilities. This interest is not limited to the hospital and medical professions but public spirited civic leaders and organizations have accepted their responsibility. Working together, these groups are developing plans for hospitals necessary to safeguard the health of the people.

McCone County Hospital, Circle, Montana, 10-Bed Facility
Completed April 1950

CONTEMPLATED HOSPITAL CONSTRUCTION

A survey of contemplated hospital construction in Montana was conducted by the Division during October, 1947. An attempt has been made by the Division to keep the survey data current. The following is a listing of proposed hospital projects which includes new construction, additions and alterations to existing facilities.

Institution or Sponsoring Agency	Location	Type	Beds	Estimated Cost
St. John's Lutheran Hospital	Libby	General	25	$ 255,100.00
†Hotel Dieu	Polson	General Alterations	9	15,000.00
§Kalispell General	Kalispell	General Addition	24	192,000.00
Sanders County Hospital	Hot Springs	General	10	140,500.00
†St. Patrick's Hospital	Missoula	General Addition	179	2,500,000.00
‡Memorial Hospital	Missoula	General Addition	58	360,000.00
§Glacier County Memorial Hospital	Cut Bank	General	36	307,173.47
†Toole County Hospital	Shelby	General	30	344,771.00
†Malta Hospital	Malta	General	30	265,793.00
†Teton Memorial Hospital	Choteau	General	25	212,000.00
Liberty County Hospital	Chester	General	10	160,000.00
Kennedy Deaconess	Havre	Nurses' Home		Not Available
‡Daniels Memorial Hospital	Scobey	General	19	267,000.00
Sheridan Memorial Hospital	Plentywood	General	25	255,100.00
§Trinity Hospital	Wolf Point	General	30	Not Available
†Roosevelt Memorial Hospital	Culbertson	General	10	92,000.00
†Garfield County Hospital	Jordan	General	15	257,834.00
†McCone County Hospital	Circle	General	10	169,460.00
†Community Memorial Hospital	Sidney	General Addition & Alteration	33	267,690.00
Powder River County	Broadus	General	10	160,000.00
Fallon County Hospital	Baker	General	25	270,000.00
†Miles City Hospital	Miles City	General Addition & Alteration	90	1,822,000.00
†Wheatland Memorial Hospital	Harlowton	Chronic General	10 15	261,000.00
Roundup Memorial Hospital	Roundup	General	25	280,000.00
Livingston Community Hospital	Livingston	General	60	670,000.00
†Sweet Grass County Hospital	Big Timber	General	10	159,000.00
Stillwater County Hospital	Columbus	General	25	280,000.00
†Carbon County Memorial Hospital	Red Lodge	General	25	324,848.00
§Billings Deaconess	Billings	General Addition & Alteration	45	815,000.00
St. Vincent's Hospital	Billings	General	131	1,725,000.00
Granite County Hospital	Philipsburg	General	10	153,463.00
†Shodair Hospital	Helena	Specialized	25	100,000.00
St. Ann's Hospital	Anaconda	General	75	1,300,000.00
†Butte Community Memorial Hospital	Butte	General	122	3,000,000.00
†Jefferson-Madison Memorial Hospital	Whitehall	General	15	150,000.00
‡Montana Tuberculosis Sanitarium	Galen	T. B. Addition	72	650,000.00
Total Contemplated Construction				$18,181,732.47

Status as of June 30, 1950:
† Under construction. § Completed. ‡ Advertising for bids.

During World War II, many communities in Montana were planning hospital construction projects for the post-war period. In most instances, construction estimates were based on pre-war building costs. As a result, fund raising campaigns and bond issues did not produce sufficient funds to meet increased construction costs in the post-war period. This coupled with minimum standards for construction and equipment of hospitals (required by law for the safety of the patient) has increased hospital construction costs considerably.

The Montana State Board of Health has received requests for financial assistance under the provisions of the Hospital Survey and Construction Act (Public Law 725, 79th Congress) from every sponsor of a hospital project in the State, with the exception of the Butte Community Memorial Hospital at Butte. Consideration could be given only to hospital projects included in the top priority group in the Montana State Plan for Hospital Construction, due to the limited Federal funds allocated to Montana for hospital construction purposes. The original State Plan included twenty-six (26) projects in the general hospital category in the top priority group, and therefore requests for financial assistance for projects in the lower priority groups could not be considered.

LEGISLATION

The need for financial assistance to sponsors of hospital projects was recognized by members of the Thirty-first Montana Legislative Assembly which convened in January, 1949. Senate Bill No. 53, a bill for an act entitled: "An Act to authorize the State of Montana to participate jointly with the Federal Government on a dollar for dollar basis in carrying out a program of hospital construction in accordance with the provisions of Chapter 270 of the Session Laws of Montana of 1947 and the provisions of the Federal Hospital Survey and Construction Act (Public Law 725 of the 79th Congress, approved August 13, 1946), in cases where the appropriations of money made by the Federal Government under said Public Law 725 to the State of Montana are inadequate to meet the Federal share of hospital construction, and repealing all acts and parts of acts in conflict herewith."

Senate Bill No. 53 was passed by the Senate and the House and subsequently signed by Governor John W. Bonner. Since the Bill originated in the Senate, it carried no appropriation. An appropriation bill for State-aid for hospital construction was not introduced in the House of Representatives and therefore no State-aid is available.

SCHEDULED HOSPITAL CONSTRUCTION

First Year's Construction Program. Montana originally received a Federal allotment of $231,750.00 for hospital construction covering the period from February 19, 1948, to June 30, 1948. This amount was later reduced to $231,530.00.

Under the Federal regulations, the percentage participation on the individual project was one-third of the total estimated cost of the project. The balance, or two-thirds, of the cost was supplied by the agency sponsoring the project.

Projects were considered for inclusion on the Project Construction Schedule on a "first come—first served" basis after the Montana State Plan for Hospital Construction had been publicized. Sponsoring agencies of projects scheduled were required to demonstrate that the project was in compliance with the Montana State Plan for Hospital Construction; the proposed project was in an advanced stage of planning and the sponsoring agency had its share of the financial resources required for the project.

The first Project Construction Schedule prepared by the State Board of Health and approved by the U. S. Public Health Service provided for the following projects in the general hospital category: Glacier County Memorial Hospital, Cut Bank, 36 beds; Teton Memorial Hospital, Choteau, 22 beds; and Fallon County Hospital, Baker, 19 beds. This schedule was later revised to include the Sweet Grass County Hospital, Big Timber, a 10 bed facility. The opening of bids for the proposed Fallon County Hospital at Baker revealed that construction costs for the project were in excess of funds available to Fallon County. As a result, the Board of County Commissioners, Fallon County, requested that the project be removed from the construction schedule. The McCone County Hospital, Circle, a 10 bed facility, was added to the schedule.

Second Year's Construction Program. The second year's allotment of Federal funds amounted to $224,137.00 for the period July 1, 1948, to June 30, 1949. Projects were selected and scheduled in the same manner as the previous year.

Early in the program it was noted that estimates submitted for proposed projects, in most cases, were too low. This was repeatedly called to the attention of the sponsors and their architects. The result was, that as bids were opened, it was revealed that construction costs were in excess of funds available to the sponsoring agencies. This condition necessitated frequent revisions of project construction schedules, by dropping scheduled projects and adding new projects.

The second year's construction schedule included the following projects in the general hospital category: Toole County Hospital, Shelby, 20 beds; Carbon County Memorial Hospital, Red Lodge, 26 beds, and Malta Hospital, Malta, 30 beds.

Third Year's Construction Program. Montana received an allotment of $172,750.00 for hospital construction for the third year of the program for the period July 1, 1949, to June 30, 1950. The enactment of Public Law 380 of the Eighty-first Congress amended the Hospital Survey and Construction Act (Public Law 725—79th Congress) to extend its duration and provide greater financial assistance in the construction of hospitals. As a result, Montana's allotment was increased from $172,750.00 to $345,499.00. These monies became available upon approval of the 1949 Revision of the Montana State Plan for Hospital Construction. The percentage of participation on the individual project was also increased from one-third to 42.41 percent of the total estimated cost of the project.

In preparing the Project Construction Schedule for the third year, it was determined to schedule a two-year program to encumber monies already allocated and those becoming available for the Fiscal Year 1951, starting July 1, 1950. The reasoning for this was two fold: To guard against increasing construction costs, and to place projects under construction early in the season thereby having the structure enclosed before winter.

The construction schedule included the following projects: Garfield County Hospital, Jordan, 17 beds; Daniels Memorial Hospital, Scobey, 19 beds; Granite County Hospital, Philipsburg, 10 beds; Wheatland Memorial Hospital, Harlowton, 25 beds (15 general, 10 chronic) Pick-up Project; Roosevelt Memorial Hospital, Culbertson, 10 beds, for equipment only; Sanders County Hospital, Hot Springs, 10 beds.

Summary of Project Construction Schedules. The following is a summary as of June 15, 1950, of projects included under the first three years of the program.

Montana State Board of Health

SUMMARY OF PROJECT CONSTRUCTION SCHEDULES

June 15, 1950

PROJECT	Location	Project No.	Total Estimated Cost	Estimated Federal Share	Federal Share Charged to Fiscal Year			
					1948	1949	1950	1951
Glacier County Memorial Hospital	Cut Bank	Montana-6	$306,803.57	$101,281.42	$ 98,244.31	$ 2,000.00	$ 1,037.11	$
McCone County Hospital	Circle	Montana-3	156,924.81	52,308.27	50,647.39		1,660.88	
Sweet Grass Community Clinic	Big Timber	Montana-5	159,000.00	53,000.00	53,000.00			
Teton Memorial Hospital	Choteau	Montana-4	207,602.16	68,534.05	29,638.30	28,678.37	10,217.38	
Toole County Hospital	Shelby	Montana-2	344,771.58	114,923.86		89,923.86	25,000.00	
Carbon County Memorial Hospital	Red Lodge	Montana-9	324,848.60	108,282.87		90,000.00	18,282.87	
Malta Hospital	Malta	Montana-7	265,793.20	112,722.90		13,534.77	40,000.00	59,188.13
Garfield County Hospital	Jordan	Montana-8	257,834.00	105,742.55			40,000.00	65,742.55
Daniels Memorial Hospital	Scobey	Montana-11	211,300.00	89,612.33			40,000.00	49,612.33
Granite County Hospital	Philipsburg	Montana-12	148,463.27	62,963.27			30,000.00	32,963.27
Wheatland Memorial Hospital	Harlowton	Montana-13	261,151.02	47,338.18			47,338.18	
Roosevelt Memorial Hospital	Culbertson	Montana-15	90,529.82	29,345.00			29,345.00	
Sanders County Hospital	Hot Springs	Montana-14	111,323.97	47,212.50			20,000.00	27,212.50
Reserve Fund							42,617.58	
TOTAL			$2,846,346.00	$993,267.20	$231,530.00	$224,137.00	$345,499.00	$234,718.78
FEDERAL ALLOTMENT					$231,530.00	$224,137.00	$345,499.00	$200,000.00*

* The announcement of this allotment was received in September, 1950, before this report went to print. The deficiency is evident.

Status of Federal-Aid Projects. The Glacier County Memorial Hospital at Cut Bank was the first project completed under the program. The hospital was dedicated on April 23, 1949, and formally opened to receive patients on May 27, 1949.

Construction of the McCone County Hospital at Circle was completed April 1, 1950. It is anticipated that the hospital will be opened upon delivery of required equipment.

It is anticipated that the Sweet Grass County Hospital at Big Timber will be completed July 1, 1950. The bulk of the equipment required has been delivered and it is believed that the hospital will be placed into operation by the middle of September.

The following is the status of construction as of June 30, 1950, for scheduled projects.

Project	Location	Percentage Construction Completed	Remarks
Glacier County Memorial Hospital	Cut Bank	100	Completed and occupied
Teton Memorial Hospital	Choteau	87	
Sweet Grass County Hospital	Big Timber	100	
McCone County Hospital	Circle	100	
Toole County Hospital	Shelby	56	
Carbon County Memorial Hospital	Red Lodge	49	
Malta Hospital	Malta	12	
Garfield County Hospital	Jordan	5	
Daniels Memorial Hospital	Scobey		Bids scheduled for August
Granite County Hospital	Philipsburg		Final plans and specifications nearly completed
Wheatland Memorial Hospital	Harlowton	78	Fractional pick-up project
Roosevelt Memorial Hospital	Culbertson		Project for equipment only
Sanders County Hospital	Hot Springs		Final plans and specifications being prepared

Construction Payments. The Federal regulations provide for periodic payments to the sponsor of a project for cost of work performed, and materials and equipment furnished.

Requests for payment under the construction contract are submitted in each of three stages, as follows:

> The first installment when not less than 25 percent of the work of construction of the building has been completed,
>
> The second installment when the mechanical work has been substantially roughed in, and
>
> The third installment when work under the construction contract is completed and final inspection made.

All costs that have not been determined at the time of the third payment for work performed under the construction contract, including equipment and other eligible costs, form the basis of a request for final payment of the Federal share of the entire project.

The State Board of Health, upon inspection of the project, certifies to the Surgeon General of the U. S. Public Health Service the amount of payments due to the sponsoring agency. Certification for payment may be delayed, in some instances, due to failure on the part of the sponsor to furnish certain documents required under the State and Federal regulations. The following is a schedule of payments made to sponsors of hospital projects.

Project	Location	Payment	Amount	State Warrant No.	State Warrant Date
Glacier County Memorial Hospital	Cut Bank	1st	$ 62,612.81	507,696	12/20/48
		2nd	28,421.05	526,006	5/16/49
McCone County Hospital	Circle	1st	20,352.94	539,927	8/12/49
		2nd	17,540.35	559,120	1/24/50
Sweet Grass County Hospital	Big Timber	1st	18,494.43	552,625	11/30/49
Teton Memorial Hospital	Choteau	1st	38,546.62	574,034	5/3/50
Carbon County Memorial Hospital	Red Lodge	1st	41,404.22	582,335	6/26/50
Total Payments Made Up to June 30, 1950			$227,372.42		

It is anticipated that the third and final payment due to Glacier County for the construction of the Glacier County Memorial Hospital at Cut Bank will be made in the near future. Inspections have also been made for the third payment on the McCone County Hospital and the second payment on the Sweet Grass County Hospital.

Proposed Projects. It was originally the plan of the State Board of Health to schedule projects in the 1950 construction schedule (third year's construction program) to encumber monies allocated to Montana for the fiscal year 1950 and those to be allocated for the fiscal year 1951. Accordingly, projects were scheduled to encumber the 1950 allotment of $345,499.00 and approximately two-thirds of the anticipated 1951 allotment of $345,499.00 with an additional project or two to be added after July 1, 1950, when the 1951 monies would become available.

On February 17, 1950, the State Board of Health received the information from the U. S. Public Health Service that "assuming that Congress authorizes an additional $150,000,000.00 for the 1951 fiscal year, each state's allotment for the 1951 fiscal year will be the same as the 1950 fiscal year allotment." It further stated that "the states should program on the basis of the 1950 allotment."

The State Board of Health received information on March 29, 1950, that Congress was considering reducing the 1951 appropriation for hospital construction from $150 million to $75 million. The Montana Representatives and Senators were contacted with the request that they support the original appropriation of $150 million. As of June 30.

1950, it appeared that Congress would not cut the appropriation to the $75 million figure. However, no additional projects will be included on the current construction schedule until official notification has been received as to the amount of Montana's allotment for the fiscal year 1951.

The State Board of Health has received numerous requests for financial assistance from sponsors of hospital projects included in the highest priority group of the Montana State Plan for Hospital Construction. In every instance, sponsors have requested that their project be included on the current construction schedule.

The following is a tabulation of proposed projects in an advanced stage of planning awaiting placement on construction schedules.

Proposed Project	Location	No. of Beds	Total Estimated Cost	Federal Share (42.41%)
Fallon County Hospital	Baker	19	$ 260,000.00	$110,292.00
St. John's Lutheran Hospital	Libby	25	224,850.00	95,381.37
Sheridan Memorial Hospital	Plentywood	25	232,600.00	98,668.92
Livingston Community Hospital	Livingston	60	670,000.00	284,214.00
			$1,387,450.00	$588,556.29

It will be noted that a minimum of $588,556.29 in Federal monies would be required to care for immediate hospital construction needs.

In addition to the above, the Roundup Memorial Hospital Association, Roundup, is contemplating the construction of a 25 bed facility at a total estimated cost of $265,000.00 for which Federal-aid has been requested.

Stillwater County has presently $100,000.00 for the construction of a 25 bed general hospital at Columbus. Voters of Stillwater County will vote on a supplemental bond issue in July. If the bond issue carries, Stillwater County will have $150,000.00 towards the construction of the proposed hospital having an estimated cost of $231,579.00.

The voters of Powder River County will vote on a $100,000.00 bond issue in July. If the issue carries, the County contemplates the construction of a 10 bed hospital. Powder River County has no hospital facilities at the present time, nor does it have a physician.

It is anticipated that by early fall, the State Board of Health will have received requests in excess of $900,000.00 in Federal monies for hospital construction.

HOSPITAL ADVISORY COUNCIL MEETING

A joint meeting of the Hospital Advisory Council, the State Board of Health, and personnel of the State Board of Health was held in the Governor's Reception Room, State Capitol Building, Helena, on November 18, 1949. The purpose of the meeting was to discuss the first annual (1949) revision of the Montana State Plan for Hospital Construction.

The meeting was opened by Dr. B. K. Kilbourne, Executive Officer, State Board of Health, who gave a brief review of the hospital construction program. This was followed by a round-table discussion with Robert J. Munzenrider, Consulting Engineer of the Division, as moderator.

The original State Plan for Hospital Construction was reviewed for the purpose of discussion for necessary changes.

Hospital Services Areas. In preparing the original State Plan, the State was divided into hospital service areas. These were developed, taking into account the following: population distribution; natural geographic boundaries; location of retail trade centers; location of highways and railroads and time-travel factors. On this basis, twenty-four rural and six intermediate hospital service areas were developed.

The hospital service areas were reviewed to determine whether service area boundaries required adustments, or whether additional service areas should be developed. It was the feeling of the Council that the existing hospital service areas are satisfactory.

Acceptable and Non-Acceptable Hospitals Report. A review was made of all existing hospitals in the State to determine whether hospitals originally listed as acceptable should be reclassified as replaceable. It was the opinion of the Council that the original classification under the State Plan was satisfactory with the exception of Saint Ann's Hospital at Anaconda. The Council recommended that this institution be classified as replaceable in revising the State Plan because of its age and construction. It was also recommended that the revised State Plan provide for a 100 bed facility at Anaconda.

The existing hospitals at Livingston were also discussed. The general feeling of the Council was that the two existing hospitals at Livingston be classified as replaceable and that the revised State Plan provide for a 60 bed general hospital rather than a 50 bed facility as shown in the original State Plan.

Hospital Construction Priorities. The method of selection of hospital projects for inclusion on project construction schedules was discussed. It was pointed out that to the date of the meeting, projects were scheduled on a first-come, first served basis. It was the feeling of personnel of the State Board of Health that this method of scheduling projects was unsatisfactory since certain communities in the top priority group in the State Plan have a greater need for hospital facilities than other communities in the same group. It was suggested that a priority sequence be developed within the top priority group.

After considerable discussion, the Council suggested that the method used in the past in selecting projects be continued. However, in revising the State Plan, upon consultation with personnel of the U. S. Public Health Service, a priority sequence was established in the top priority group taking into consideration communities having the greatest need for hospital facilities.

Percentage Participation on Scheduled Projects. Public Law 380 of the Eighty-first Congress amended the Hospital Survey and Construction Act (Public Law 725, 79th Congress) to extend its duration and provide greater financial assistance in the construction of hospitals.

As a result of Public Law 380, Montana's allotment for the fiscal year 1950 was increased from $172,750.00 to $345,499.00. The amendment also changed the portion of Federal participation on the individual project from a flat one-third for all projects in all states to a percentage which, at the option of the State Agency, is uniform and applicable to all projects in the State. The percentage participation, or Federal share, for all projects may not be less than 33 1/3 percent and not more than 66 2/3 percent or the State's allotment percentage, whichever is the lower.

Since Montana's allotment percentage was established at 42.41, the Federal share could be established between the limits of 33 1/3 and 42.41 percent. It was also possible to determine a variable grant which would adequately reflect a variation in the economic status of areas in the State.

The variable grant plan was not considered as feasible by the Council due to community rivalry and the difficulties encountered in attempting to determine the economic status of an area. The problem was therefore resolved to determining the percentage participation.

Personnel of the State Board of Health pointed out that with Federal participation at 33 1/3 percent the available $345,499.00 would allow a total construction program of $1,036,498.00, while at 42.41 percent a total of $814,664.00 in hospital construction could be carried out. Upon consideration of increased hospital construction costs and the difficulty experienced in rural areas in securing sufficient finances for hospital construction, the Council recommended to the State Board of Health that the Federal participation on the individual project for the fiscal year 1950 be increased to 42.41 percent. The recommendation was considered, and approved by the State Board of Health on November 19, 1949, thereby establishing the percentage participation for the fiscal year 1950 at 42.41 percent of the total estimated cost of the project.

EDUCATIONAL PROGRAMS

Sponsoring Agencies. Plans and specifications for hospital projects submitted during the early stages of the hospital program to the State Board of Health for review indicated a lack of planning at the sponsor's or community level. It appeared in most cases that the sponsoring agency, upon determining the number of beds for the proposed facility, employed the services of an architect to prepare plans and specifications. Apparently, no consideration was given to the needs of the community, the services to be offered, or to the method of operation of the hospital upon its completion. In some instances it was necessary to reject final plans and specifications for hospital projects since they did not meet the minimum standards for construction and equipment. This lack of planning resulted in increased costs to the sponsors.

An attempt has been made by the Division to contact sponsors of hospital projects before the services of an architect have been engaged. In this way, the problems involved in hospital construction and operation are brought more vividly to the attention of the sponsor. Items discussed with the sponsors include the communities' hospital needs, hospital planning, construction costs, equipment, and the operation of the facility upon completion of the construction.

Upon determining the number of beds of the proposed facility a schedule of the facilities and services to be included in the hospital should be determined. This is commonly referred to as a program. Upon completion of the program, the services of an architect should be secured and the plans developed on the basis of the program. Outline drawings of the floor plans should be submitted to the State Board of Health for review before preliminary and working drawings are prepared. In this manner, any changes resulting from a review of the outline drawings may be corrected at this stage, thereby avoiding costly changes which result in the advanced stages in planning.

It is also desirable in the early planning stage to give consideration as to the proposed operation of a facility upon completion and the cost of operating and maintaining the completed facility. This, in a good many instances, has not been given consideration by sponsors of hospital projects. It is recommended that the proposed method of operation be determined preferably before the services of the architect are obtained in order that the operating organization may assist in the planning of the physical plant. The operating organization should also be given the task of preparing equipment lists, purchasing equipment, supervising the delivery and installation of equipment, and the preparation of an equipment inventory. The operating organization can also recruit the necessary personnel required to operate the hospital.

Personnel of the Division have met with sponsors of hospital projects to discuss the various problems involved in hospital construction and operation. Literature pertaining to hospital construction and operation has also been distributed to sponsors of hospital projects.

Architects. Early in the program literature pertaining to hospital construction and copies of the regulations outlining the minimum standards of construction and equipment for hospitals was furnished to architects in the State. At various times meetings have been scheduled with architects to discuss the hospital construction program and minimum standards for construction. More detailed literature has been supplied to architects engaged in the preparation of plans and specifications for hospital projects.

Personnel of the Division have assisted architects in a consultive capacity in preparing plans for hospital structures. Material submitted to the State Board of Health is reviewed and comments prepared which are submitted to the architect and the sponsor for their further consideration. It has been found that the best results are obtained when the plans as submitted can be discussed with the sponsor and the architect. In this way, both the architect and the sponsor receive the benefit of the thinking behind the comments or recommendations made as a result of the review of the material submitted.

Organizations. Personnel of the Division have appeared before organizations such as the Montana Health Planning Committee, the Montana Hospital Association, Montana Board of Fire Underwriters, etc., to discuss the hospital construction program. Lectures have also been given to the student nurses of Carroll College, Helena, and the nursing staff, U. S. Veterans Administration Hospital at Fort Harrison.

Personnel Training. Mr. B. E. Cave (B. S., Architecture) was added to the technical staff of the Division, as Hospital Construction Consultant, on December 7, 1949. Members of the technical staff of the Division have attended a three week orientation course in hospital planning sponsored by the Division of Hospital Facilities of the U. S. Public Health Service at Washington, D. C. Personnel of the Division have also attended seminars and meetings sponsored by the U. S. Public Health Service at Denver. These included discussions of the hospital program and equipment clinics. Members of the Division have also attended meetings and conferences of contractors and other groups interested in hospital construction.

DIVISION OF HOSPITAL FACILITIES

*Marjorie V. Young, C. H. A., Hospital Standards Consultant

HOSPITALS AND RELATED FACILITIES

The principal duties of the Consultant have been the inspection of hospitals, nursing homes and homes for the aged. Conferences have been held with hospital administrators, personnel, boards of trustees, supervisors of departments of public welfare and county commissioners. The work has also included the assembling of data from the annual reports submitted by the hospitals on June 30th of each year and the collection of licensure fees and the issuing of licenses.

Recommendations made for improvements in existing hospital facilities are made with the intention of providing maximum benefits to the patient. Re-inspections are made in order to encourage the administrators in their efforts to meet the requirements recommended. Re-inspections are also made in order to advise administrators as to the best methods that will enable them to serve the people of the community by providing better hospital care.

In the inspection of both hospitals and nursing homes, an effort has been made to help the administrators improve the physical plant and meet the minimum standards as set forth in the Rules and Regulations of the State Board of Health.

Both hospitals and nursing homes not licensed are making a sincere effort to comply with the recommendations made in order to meet the minimum requirements for licensure and are meeting a real need in their particular communities.

One new 36-bed hospital constructed with Federal aid was opened at Cut Bank in May 1949.

HOMES FOR THE AGED

During this biennial period, licenses were issued for 32 homes for the aged in 1948-49 and 39 in 1949-50.

During this period, special stress has been made in inspections of all such homes to see that minimum requirements are met, particularly as relates to safety and fire hazards and all have been approved by either the State fire marshal or local fire chief. The cooperation of licensees in carrying out recommendations in order to meet the minimum requirements has been quite good.

A new County Home for the Aged in Cascade County was opened in 1949 and provides an excellent facility for its aged.

Statistics

	1948-49	1949-50
Inspection of Hospitals and Nursing Homes	165	90
Hospitals licensed	59	56
Maternity Homes licensed	4	4
Nursing Homes and Homes for the Aged licensed	32	39
Hospitals not licensed	13	12
Maternity homes not licensed	1	0
New Hospitals opened	0	1

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* Resigned May 1950

HYGIENIC LABORATORY DIVISION

Edith Kuhns, B. S., Director

The principle functions of the Hygienic Laboratory Division are:

Examination of specimens of various materials of human origin, submitted by private physicians, clinics, hospitals and various county, State and Federal agencies for the presence of communicable disease

Identification of parasitological specimens, cultures, insects, etc., submitted for study from clinical and private sources

Administration of the laboratory provisions of the Prenatal and Premarital Examination Laws

Registration and approval of local laboratories performing prenatal and premarital serologic tests for syphilis and other examinations for communicable diseases

Special investigations and studies upon request of various physicians and other agencies

Consultive services upon request to local laboratories and physicians.

Hygienic Laboratory, State Board of Health

The division should also assume some responsibility in furthering the standardization and improvement of all laboratory work having to do with the diagnosis and prevention of disease, in any laboratory in the State.

Biologics are not produced or manufactured by the State Board of Health but are purchased under State contract. They are stored by a local drug firm and distributed through the direction of the office of Epidemiology.

REPORT OF SCIENTIFIC WORK

The total number of examinations made during this biennial period reached 271,838 which exceeded those of the previous biennium by 11,354, or 4.3%. The total number of specimens received was 128,891, an increase of 1,787, or 1.4% over those of the previous period. It is interesting to note that the increase was not mainly in tests for syhpilis as has been true for a number of years, but in other types of communicable disease examinations. The increase in this field was 20.9%. This actually represents a great deal more effort and time than a corresponding increase in syphilis serology, since this type of specimen requires considerably longer periods of time and more complex manipulation.

Decreases were noted only in the number of examinations made for gonorrhea and diphtheria.

Tables I, II, and III are presented for consideration and were formulated to show the scope and trend of the work completed during the past two years. They are self-explanatory.

There have been no serious outbreaks of communicable disease during this biennium. No conclusions as to the prevalence of various diseases may be drawn from Table I, for it is not known how many individuals are represented since several samples are often submitted from the same person. This is especially true in the case of blood and spinal fluid specimens submitted for serological tests for syphilis, particularly when the patient is under treatment.

Syphilis. A total number of 228,297 examinations for syphilis serology was made upon 115,074 specimens, an increase of 3813 examinations and 2429 specimens over that of the previous biennium. Total protein determinations are now run routinely on all spinal fluid specimens. A total of 16,249 blood specimens were received for premarital examinations. There have been 16 local laboratories approved for this service in the State. These laboratories examined a total of 13,148 premarital specimens during this period.

The laboratory, in 1949, again participated in the nationwide evaluation study of serodiagnostic tests for syphilis conducted by the United States Public Health Service. Ratings for both the Kolmer Simplified Complement-fixation Test and Kahn Standard Tests were satisfactory.

Gonorrhea. A total of 1508 examinations for gonorrhea were made. There is little demand for cultures from this laboratory for this disease, since no shipping media yet devised has proved of practical value. Seventeen complement fixation tests were run.

Enteric Fevers. Requests for examination for the enteric fevers totaled 20,335, an increase of 36.3% over that of the previous biennium. We have continued to routinely culture all blood clots remaining from the Widal, but since the positive returns have been so few, it is felt that this procedure should be limited only to certain indicated specimens and that mass culturing be discontinued.

Brucellosis. Agglutinations for Brucella infections numbered 4964. An effort will be made within the next year to secure blood cultures from all individuals showing a significant titer of agglutinins in an effort to isolate the causative strain of Brucella.

Tularemia. Agglutinations for tularemia totaled 4957. They are performed routinely on all specimens submitted for enteric fevers as well as upon special request. Interest in this disease has been stimulated by the studies made upon water borne tularemia. These studies will soon be published by the Rocky Mountain Laboratory, United States Public Health Service at Hamilton.

Diphtheria. The low incidence of diphtheria in the State the past two years has been reflected in the small number of cultures submitted to the laboratory, a total of only 1200. All positive cultures are routinely confirmed by animal virulence before a final report is submitted.

Tuberculosis. Examinations of various body materials for tuberculosis totaled 4129. Routine culturing of all specimens was started in April 1950. Although only a relatively small series of figures are available so far, results indicate that at least 20% more positives are obtained by this method than by microscopic means. The routine cultural studies involving the handling of large numbers of highly infectious materials and cultures incident to the identification of M. tuberculosis constitutes a definite hazard to the workers involved and provision should be made as soon as possible for this phase of laboratory work to be conducted in isolated quarters.

Parasitic Diseases. For the past two years, upon the recommendation of the Communicable Disease Center of the United States Public Health Service, examination for intestinal parasites and ova have been conducted routinely upon all fecal specimens received. The incidence of positive findings have been so low that it is felt that there is not sufficient justification for continuing the procedure and henceforth, such examinations will be done only upon request. A special shipping media recently devised, employing polyvinyl alcohol gives promise of being a practical means of submitting such specimens for relatively long distances.

PHYSICAL EQUIPMENT

The following new physical equipment has been purchased:

- 1 large International Centrifuge
- 1 Brewer Automatic Pipetting Machine
- 1 Beckman pH meter
- 1 Klett-Summerson Photoelectric Colorimeter
- 1 Inspissator, Levin-Brandon Model
- 1 Disposal Incinerator
- 1 Electric Rotator—for slide serology
- 1 new Compressor and Motor for the built-in Frigidaire Refrigerator

PERSONNEL

The frequent turnover in the professional staff constitutes a serious handicap to a well-balanced, smoothly functioning, dependable laboratory service. Many of the workers leave for more lucrative positions elsewhere as soon as they have acquired some proficiency in the laboratory field. Many of the private clinic and hospital laboratories now offer more attractive salaries than has been possible in our division. It is felt that the proposed revisions in the compensation plan will do much to correct this situation.

TRAINING

The Director attended in May 1949 the Directors' Courses given by the Communicable Disease Center of the United States Public Health Service in Atlanta, in General Bacterial Diseases, Mycotic Diseases, and Tuberculosis.

This Division assisted in arranging for speakers from the Communicable Disease Center for a meeting of the Montana Society of Medical Technologists held in March 1950 at Missoula. It is hoped that it will be possible to hold a training school for medical technologists in 1951. This training school will be planned to provide demonstration and participation for the technicians themselves rather than by limiting presentation to the lecture method.

In-service Training. It is becoming extremely difficult to provide a satisfactory in-service training program for new laboratory workers. At present, no one on the staff has the time to devote to the training and orientation of new employees in the general field of laboratory work, and neither does the new worker have sufficient time to acquaint himself with more than the basic features of the work for several months due to the heavy press of routine daily duties. If possible, the staff should be augmented by at least one person so that the time of key workers can be released to devote a portion of their time to the training of others.

Dependence cannot be placed upon the colleges and universities to produce persons trained and skilled in the specialized procedures required of them in a public health laboratory. The universities now only provide training in the fundamentals of the sciences which are basic to the learning of laboratory technics. The practice of one year of laboratory internship as part of the required curriculum toward a degree is to be highly commended.

Approval of Local Laboratories. The duties concurrent with the registration and approval of local laboratories are such that the administrative and field work connected with this program cannot be handled efficiently as a part-time job by the director of any other present member of the staff because of the pressure of other duties. As a consequence, the program has not been developed as it should be, and little progress has been made beyond carrying out the mechanics of registration and approval. It is hoped that an active serologic evaluation study for the local laboratories can be initiated soon.

EXTENSION OF PRESENT SERVICES AND RECOMMENDATIONS

The extension of any of the present services is dependent upon the acquisition of additional space which is anticipated. The technical work is still performed in the same one room as of twenty years ago. Increase in the volume of work is shown by the following records:

1929-30— 20,285 examinations completed
1949-50—137,139 examinations completed
Increase—575%

It is recommended that when additional space is available, the following provisions be made:

A separate room for bacteriology and serology
A separate cubicle for tuberculosis examinations
A room for glassware washing and media making facilities

The employment of an extra bacteriologist is contemplated.

In future planning consideration should be given to the following:

Expansion of services as found necessary to implement any departmental program for the public health control of chronic disease, if and when formulated

Distribution of standard reagents to local laboratories
RH grouping program on all prenatal bloods submitted
Improved cultural procedures for isolation of Brucella from shipped blood specimens

Cytological studies on vaginal secretions for early diagnosis of uterine cancer, important in the public health control of the disease.

TABLE I

Comparative Examinations
Fiscal Periods 1946-48 — 1948-50

TYPE OF EXAMINATION		FISCAL PERIOD		GAIN OR LOSS	
		1946-48	1948-50	Number	%
Syphilis	Specimens	112,645	115,074	+2,429	+2.1
	Examinations	224,484	228,297	+3,813	+1.6
Gonorrhea		2,088	1,508	−580	−27.7
Enteric Fevers		14,762	20,335	+5,573	+36.3
Brucellosis		3,806	4,972	+1,166	+30.4
Tularemia		3,598	4,958	+1,360	+37.8
Diphtheria		3,846	1,200	−2,646	−68.4
Tuberculosis		3,354	4,129	+775	+23.1
Parasitic Diseases		336	491	+155	+43.1
Miscellaneous		4,087	5,948	+1,861	+45.4
TOTAL EXAMS		260,484	271,838	+11,354	+4.3
TOTAL SPECIMENS		127,104	128,891	+1,787	+1.4

TABLE II

Hygienic Laboratory
Report of Laboratory Examinations For July 1, 1948 to July 1, 1950

	Positive	Doubtful	Negative	Unsatisfactory	Unclassified	Total Exams	Total Specs.
SYPHILIS							
Kolmer Comp.-Fix. Test							
Blood	4,530	1,205	99,999	4,624		110,358	110,358
Spinal Fluids	159	15	1,296	64		1,534	1,534
Pleural & Other Fluids			1			1	1
Kahn Precipitation Test							
Blood	3,774	1,030	101,014	7,621		113,439	3,081
Pleural & Other Fluids			1			1	1
No Tubes & No Numbers				94		94	94
Spinal Fluids							
Colloidal Gold				1	1,316	1,317	
Total Protein				1	1,557	1,558	
Treponema Pallidum							
Darkfield	1		2		1	4	4
Stained Smears	1					1	1
GONORRHEA							
Smears	104	16	1,359	8	1	1,488	1,488
Comp.-Fix. Test	1	2	5	5	4	17	17
Cultures			2		1	3	3
TYPHOID-PARATYPHOID FEVERS							
Blood							
Macro-Agglutination Test							
S. Typhosa							
"H" Aggl.	38	96	4,772	47		4,953	4,953
"O" Aggl.	11	37	4,859	46		4,953	

TABLE II (Continued)

	Positive	Doubtful	Negative	Unsatis-factory	Unclassi-fied	Total Exams	Total Specs.
B. Paratyphosis "A"			1			1	
B. Paratyphosus "B"	39	11	4,850	62		4,953	
Blood Cultures							
S. Typhosa	2	2	4,882	38		4,924	
Feces							
S. Typhosa	8		489	3		500	500
Urine							
S. Typhosa			46			46	46
B. Paratyphosus			1			1	1
Water							
S. Typhosa			2			2	2
Milk							
S. Typhosa			2			2	2
DYSENTERY							
Bacillary							
Blood for Aggl.				2		2	2
BRUCELLA INFECTION							
Blood Agglutination	53	39	4,828	44		4,964	
Blood Cultures	1	1	3		3	8	8
TULAREMIA							
Blood Agglutination	142	95	4,675	45		4,957	
Blood Cultures			1			1	1
STREPTOCOCCI							
Beta Hemolytic							
Throat & Nose Cultures	5		12		22	39	39
Other Cultures	1		1		2	4	4
Non-hemolytic			1			1	1
MENINGITIS							
Meningococcus							
Spinal Fluids			3			3	3
Other Types							
Spinal Fluids			1			1	1
PARASITIC DISEASES							
Ova & Parasites							
Feces	6		447	6	1	460	460
Specs. for Identification					5	5	5
Comp.-Fix. Amoebiasis					2	2	2
Fungi							
Direct Microscopic			2		3	5	5
Cultures		1	9		8	18	18
Trichinosis (Comp.-Fix. Test)					1	1	1
DIPHTHERIA							
Direct Smear			3			3	3
Cultures	16	23	1,109	38		1,186	1,186
Virulence Test	6		5			11	11
TUBERCULOSIS							
Gastric Spec.							
Animal Inoc.	3		41	6		50	50
Sputum							
Microscopic	246	12	2,987	79		3,324	3,324
Direct Smear			5		17	22	22
Animal Inoculation	10		80	11		101	101
Culture			3		33	36	36
Urine							
Direct Smear			1	1		2	2
Microscopic			6	3	7	16	16
Animal Inoculation	16		282	20		318	318
Culture	2		4	4	13	23	23
Body Fluids & Tissues							
Direct Smear	1		15		6	22	22

TABLE II (Continued)

	Positive	Doubtful	Negative	Unsatis-factory	Unclassi-fied	Total Exams	Total Specs.
Microscopic			17	2	21	40	40
Animal Inoculation	18		103	7		128	128
Spinal Fluids							
Microscopic				2	6	8	8
Animal Inoculations	9		22	3		34	34
Feces							
Microscopic			2	1		3	3
Cultures—AFB							
Animal Inoculation	2					2	2
VINCENT'S INFECTION							
Smears	6	1	11			18	18
MALARIA							
Blood Smears	1		71	4	1	77	77
WHOOPING COUGH							
Cough Plates			6	1		7	7
VACCINES PREPARED AUTOGENOUS					2	2	2
SPEC. INVESTIGATIONS							
Food Poisoning							
Botulinus Toxin		1	1	2		4	4
Bacteriological		1	2		2	5	5
Toxic			2			2	2
Blood Smear—Erythroblastosis Fetalis					1	1	1
Milk for Streptococci					1	1	1
Animal Tests Toxicity			1			1	1
Discharges—Pus, Sputum, etc.							
Microscopical	2				4	6	6
Bacteriological			4		3	7	7
Pleural & Other Fluids			2			2	2
Blood							
Cultures (not Typhoid)			17		14	31	31
Red Cell Count					2	2	2
White Cell Count					1	1	1
Diff. Count			4	2	11	17	17
Rh Grouping	245		7	6		258	258
Icterus Index					1	1	1
Spinal Fluid							
Microscopical					3	3	3
Bacteriological					23	23	23
Urine Analysis							
Microscopical					7	7	7
Physical & Chemical					1	1	1
Pregnancy Tests					3	3	3
Bacteriological					33	33	33
Nasal Smears							
Organisms					1	1	1
MISCELLANEOUS EXAMS.							
Feces for Occult Blood	1	1	18		4	24	24
Cultures for Identification					16	16	16
Specs. for Confirmation					2	2	2
Smears for Organisms					42	42	42
Cultures for Organisms					170	170	170
Heterophile Antibodies	67	44	4,784	67		4,962	
Sterility Tests	7		29		3	39	39
Animal Tests (Autopsies)					1	1	1
Proteus OX-19					66	66	66
Unclassified					48	48	48
Ducreys Bac.		1	1		1	3	3
Papanicalou Stain for Cancer				1		1	1
TOTAL						271,838	128,891

TABLE III

Specimen Containers Shipped from July 1, 1948 to June 30, 1950

	1948-49	1949-50	Total
Vials, Blood	56,131	36,652	112,783
Containers, Mailers for blood specimens	25,193	36,271	61,464
Cultures, Loefflers	1,274	1,243	2,517
Swabs, Sterile	1,292	1,271	2,563
Containers, Mailers for Throat and Nose Specimens	568	628	1,196
Slides, Glass	866	788	1,654
Containers, glass slide	443	412	855
Jars, Sputum	2,774	2,252	5,026
Containers, Sputum jar	2,592	2,174	4,766
Jars, Feces	156	127	283
Containers, Feces Jars	156	155	311
Darkfield Outfits	5		5
Blood Culture Outfits		12	12
Brucella Culture Outfits		1	1
Keidel Vacuum Tubes	3,026	4,786	7,812
Positive Syphilitic Serum	108	93	201
Negative Syphilitic Serum	3		3
Positive Spinal Fluid	1	1	2
Cough Plates		6	6
Mediam Miscellaneous			
Sabouraud's	12	12	24
Blood Agar Plates	17		17
Agar, Plain, Slants		6	6

MATERNAL AND CHILD HEALTH DIVISION

*Belle C. Richards, M. D., Physician in Charge

The Division of Maternal and Child Health has the following general objectives:

To extend State-wide facilities for constant health supervision throughout pregnancy, infancy, and childhood in cooperation with local physicians, hospitals, and public health personnel

To develop an educational program with professional and lay groups and bring about a higher standard of care for mothers and children

To coordinate facilities for maternal and child health care

To cooperate with all agencies dealing with the health and welfare of mothers and children

To strive toward the goal that every child born in Montana will have optimum chances for growth and development.

Administrative duties include formulation of plans, policies, and budgets for approval by the Executive Officer and U. S. Children's Bureau, preparation of reports of the Division as required, and supervision of all services under the jurisdiction of the Division.

Due to lack of professional staff activities declined greatly during the biennium. Only such programs as could be carried on by Public Health Nurses and clerical staff continued to operate.

MEDICAL ADVISORY SERVICE

The Maternal and Child Welfare Committee of the Montana State Medical Association serves as a technical advisory committee to the Division. This committee has been very active and helpful in an advisory capacity. During this biennium they have approved the material for the "Maternity Nursing Manual," which was prepared by the Hospital Nursing Consultant. In addition, policies and procedures have been approved by this committee for the organization of Well Child Conferences, Standing Orders for Public Health Nursing Service to Maternity and Infant Cases and plans for the Mothers' Demonstration Centers to be developed in hospitals.

WELL CHILD CONFERENCES

At the present time Well Child Conferences are held in 16 centers in Montana. They are conducted by local physicians assisted by public health nurses. Physicians receive remuneration from this Division. The conferences provide regular health supervision for infants and pre-school children. Vaccination for smallpox, immunizations against diphtheria and whooping cough are offered at the conferences and the Maternal and Child Health Division furnishes the biologicals.

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* Physician in charge from April 1, 1949 to July 31, 1950
Position vacant July 1, 1948 to April 1, 1949

Health Officer Examines Infant at Well Child Conference

PREMATURE INFANT CARE

During the past biennium special emphasis has been given in the instruction of all nurses both graduate and undergraduate in promoting better care for mothers, newborn infants, and premature infants. This has been accomplished by classes for student nurses, group discussions for graduate nurses, and by having hospital administrators accept the responsibility for giving a total nursing service to patients admitted to their institutions.

Previously a representative from the State Board of Health was called to the hospital whenever a premature infant was born; this method proved to be impractical because of the long travel distances.

Because of this impracticability ten additional Gordon Armstrong Incubators were purchased. These incubators were distributed to hospitals not having equipment for premature infants and where, because of the rural location, it is desirable to have such equipment in readiness for such emergency. There are now 34 incubators distributed to Montana hospitals. It is anticipated that this will help to decrease infant mortality.

MATERNAL AND INFANT MORTALITY STUDIES

A detailed study of maternal deaths concerning the period from 1940 through 1945 was prepared by the Maternal and Child Welfare Committee of the Montana State Medical Association and the Division of Maternal and Child Health. This was presented at the interim session of the Montana State Medical Association and published in the Rocky Mountain Medical Journal. Reprints of this study are available upon request from this Division.

At the present time a study of the infant deaths is under way and will parallel the Maternal Mortality Study.

RHEUMATIC FEVER DEMONSTRATION

A plan for a Rheumatic Fever and Heart Disease Program was submitted to the Montana State Medical Association. The plan met with the approval of this association as a pilot demonstration for Cascade County.

The objective of this program is to provide diagnostic and therapeutic services for children under 21 years of age who are residents of Cascade County and who are suspected of having heart disease.

Funds for this demonstration are provided by the U. S. Children's Bureau and the Heart Disease allotment from the U. S. Public Health Service to the State Board of Health.

COOPERATION WITH OTHER AGENCIES

The services of this Division are made available to all agencies, professional and lay groups so far as staff limitations permit. Proprofessional meetings attended by the physician in charge included Montana State Medical Association, Montana Tuberculosis Association, Montana Hospital Association, Social Welfare Conference, Montana Health Planning Committee, and School Health Commission.

The physician in charge attended the Regional U. S. Children's Bureau Conference for Directors of Maternal and Child Health Divisions held at Portland, Oregon, and also the Western Branch of the American Public Health Association.

LITERATURE DISTRIBUTION

The distribution of prenatal letters which were previously sent monthly to all maternity patients, at the request of their physicians, has been discontinued pending revision. At the present time the U. S. Children's Bureau pamphlet, "Prenatal Care," is provided as requested.

Distribution of the Children's Bureau pamphlet, "Infant Care," is continued. Copies are sent to each hospital to be given to every mother with a new born baby before she leaves the hospital. Materials on premature infant care are available to all nurses in the State.

SILVER NITRATE

Silver nitrate ampules have been furnished to hospitals and physicians for prophylactic treatment of the eyes of new born babies. During the biennium 23,000 ampules were distributed.

DIVISION OF PUBLIC HEALTH EDUCATION

K. Elizabeth Anderson, M. A., Director

OBJECTIVES

The objective of the Division of Public Health Education is to assist in the promotion and improvement of health through education. An attempt is made to create a better and more widespread understanding of what good health is, and how it may be obtained. The need for improved health practices and improved public health facilities is emphasized.

Since public health itself is chiefly educational in nature all divisions of the State Board of Health carry on some phase of health education. Consequently, the Division of Public Health Education does not have a program of its own. Personnel in this division serve in consultant capacity to other divisions in the educational phases of their programs. They also assist in the interpretation of health information given by technical personnel in the field of health to nontechnical groups or individuals. They assist in community organization and help citizen groups with their activities in the field of health. They give consultant service in the school health program.

Assisting in the technics of health education is the specific responsibility of this division.

ACTIVITY SUMMARY

Committee Work

Working in committees is an excellent medium through which health education personnel can function.

The State Health Council known as the **Montana Health Planning Committee** has continued to function during this biennium. It is an advisory health committee composed of representatives from more than forty State agencies, associations or organizations working in or interested in the field of health. Some of the Committee membership comes from the medical, dental, nursing, and education professions, voluntary health agencies, civic, labor or farm groups. In addition to the official Public Health Agencies there are also representatives from other agencies with an interest in health. Sheldon E. Davis, Ph. D., of Dillon, is the Chairman. State Board of Health representatives are the Executive Officer and the Director of Public Health Education who serves as the secretary-treasurer.

The committee was organized because of an expression of a very real need for health betterment. Its purposes are to determine the health needs and resources of Montana, to make these needs known to the people of the State, to plan an adequate program for meeting these needs and to assist in carrying out such a program. The committee summarizing its accomplishments states that they have gained through study a great deal of understanding in the general field of public health and in the ability to work together.

Some understanding and insight have been gained in the programs of the many agencies and organizations interested in the field of health. The Montana Health Planning Committee has established a pattern for local committees to follow in the coordination of activities and in group planning. The committee sponsors and continues to help county health councils.

The interest of and dissemination of information by the Montana Health Planning Committee assisted in the passage of several health and welfare laws in the 1949 legislature.

In September 1949, the seven member board of the State Board of Health met with the Montana Health Planning Committee. This provided an opportunity to inform the Board of the Committee's accomplishments, objectives and potentialities; and of their keen desire to form a satisfactory working relationship with the Board, so that improved health conditions in Montana may soon be realized.

Personnel of this division have assisted in the organization, programs, and other activities of most of the 25 county health planning committees that have been formed. The counties having such committees are listed below:

Beaverhead
Big Horn
Blaine
Cascade
Custer
Fergus
Flathead
Gallatin
Hill
Madison
Meagher
Mineral
Pondera
Richland
Roosevelt
Rosebud
Sanders
Sheridan
Silver Bow
Toole
Treasure
Valley
Yellowstone
Chouteau*
Ravalli*

* Child Health Council

Some of these committees are in the initial stages of organization and study while sixteen of them have progressed to a plan of action.

The director serves as the coordinator of the Montana Teacher Training in Health Education Committee. The Health Education consultant is also a member. The purpose of this committee is to assist in extending and improving teacher training in health education.

This committee with the assistance of local school administrators and teachers, specialists from the State Board of Health, the State Department of Public Instruction and others prepared a "Guide for the Montana Health Program." This will be available for the 1950-51 school year.

The committee, assisted by the State Board of Health and the State Department of Public Instruction, sponsored a conference on the School Health Program in May 1949. It was directed by Dorothy B. Nyswander, Ph. D., Professor of Public Health at the University of California at Berkeley. This same group and the Child Welfare Services of the State Department of Public Welfare sponsored an institute on Supervision for Consultants and Supervisors on the State level. Helvie Boothe, Ph. D., of the Menninger Foundation, at Topeka, Kansas, conducted the institute. The personnel from this Division took part in this conference.

The Director has continued as a member of the joint committee between the State Board of Health and the Montana Extension Service, which serves as a coordinating committee for the health education activities of both groups.

Meetings

During the summers of both 1949 and 1950 personnel of this Division participated in the second and third annual conferences on Community Organization for Health. These conferences were sponsored by the Montana State College Summer Sessions and were directed by Mrs. Frances Macdonald, Rural Health Specialist of the Montana Extension Service. The primary purpose of the conferences is to train for leadership in local health council work.

The Director and Health Education Consultant assisted in conducting an institute for nurses. It was sponsored by the State Board of Examiners for Nurses and the Montana State League of Nursing Education. The theme of the institute was **"How Adults Learn and Work Together."** Its purpose was to demonstrate and provide an opportunity for participation in several health education technics.

The Director is serving as a member of the Governor's Committee for Children and Youth (White House Conference). She is on the Executive and Study Sub-Committees. The objective of this committee is to study State accomplishments for children and youth since the 1940 Conference and to survey needs. This material when collected will be used for study within the State in an attempt to improve existing conditions and facilities. It will also be studied by the National Conference in planning for the country as a whole.

Talks have been given to nursing education students in Great Falls and Helena by both the Director and Health Education Consultant.

Field trips for nurses and teachers to visit the State Board of Health and local public health departments have been arranged for by the Division.

The Health Education Consultant served as president of the Montana Association of Health, Physical Education and Recreation during 1948. In 1949 she served as program chairman for their annual meeting.

Talks have been given to local home demonstration clubs, district nurses association meeting, Helena Child Study Club, Business and Professional Women's Clubs, American Association of University Women, Cascade County Heart Association, State Conference of Homemaking Teachers.

School Health

Emphasis in the school health program has been directed chiefly toward assisting in the improvement of training in Health Education. Some help has been given to groups responsible for both the preservice and in-service training programs.

In addition to the work done through the Teacher Training in Health Education Committee conferences have been held with the health education instructors at the University units. Talks have been given to the University classes and materials distributed.

The Director taught an extension class in Health Education for the University of Montana during the winter quarter of 1950. This was an evening class held in Helena with twenty-three adults enrolled. The "Outline for a Basic Course in Health Education" was used as a basis for the course. Many State Board of Health staff members served as resource people.

The Director served as a co-sponsor for a three week Health Education Workshop at the Eastern Montana College of Education during the summers of 1949 and 1950.

A section on the School Health Program at the State meeting of the Montana School Administrators Association was held in Butte in January 1950. This program was sponsored by the Teacher Training in Health Education Committee, the State Department of Public Instruction and the State Board of Health.

Consultation service has been made available to several local schools either through direct requests from school administrators or through requests from public health nurses who are working in the school health program.

Personnel from the Division of Public Health Education as well as other staff members from the State Board of Health attended one general meeting and several sub-committee meetings of the School Health Commission. Close working relationships with the State Department of Public Instruction and the Child Welfare Services of the State Department of Public Welfare staffs have continued.

Personnel from this Division assisted the State Health Officer with the revision of the Cumulative Health Records for the schools. In making this revision help was also given by the Mental Hygiene Clinic personnel, the Teacher Training in Health Education Committee, the State Department of Public Instruction, the Director of Child Welfare Services of the State Department of Public Welfare, local public health departments, and local school personnel.

The Montana State Medical Association sponsored a Physicians in Schools Conference in June 1950. Assistance was given by the State Board of Health and the State Department of Public Instruction. About 225 persons from several areas of the State attended this meeting. It provided a splendid opportunity for school administrators and teachers, university staff members, physicians, dentists, nurses, public health personnel, parents, voluntary health agencies and members of the medical auxiliary to talk over common problems and develop better cooperative working relationships in the school health program.

Narcotic Education

The 1949 legislature transferred the Narcotic Education program to the Division of Public Health Education. It had been under the State Narcotic Education Commission for two years. The legislation provides for a narcotic education consultant.

The main purpose of the program is to give assistance to school people and other interested adult groups so that they may assume leadership in the study of narcotic drugs and the social problems related to their misuse.

Consultation service is planned to assist educators to develop a program of narcotic education within the regular school curriculum. Among adult groups the aim is to enlist their cooperative support in the school program and for social action needed in the community.

The work in the local schools is planned with the school administrator. The assistance to teachers is usually the workshop type. It attempts to show how general educational principles can be applied to the study of narcotic drugs and how to correlate this study with the regular subjects in the curriculum. Bulletins which were prepared by the narcotic education consultant under the Narcotic Education Commission are distributed to schools.

Assistance is given on request to those engaged in teacher training in Montana. Other adult groups that have been reached include the Montana Congress of Parents and Teachers, the American Association of University Women, the State Federation of Women's Clubs, church groups, the Women's Christian Temperance Union, Business and Professional Women, civic groups and men's service clubs.

State appropriation is supplemented by funds from the Women's Christian Temperance Union.

Other Program Participation

The Director is serving as the Child Health Chairman for the State Parent Teacher Association, she has attended their semi-annual Board of Directors Meetings, and took part in a panel discussion on the Community Health Program at their State Convention held in Billings in October 1948. Both the Director and Health Education Consultant assisted with the Helena Conference for Children and Youth.

The Director is now serving as the Legislation Chairman of the State Conference of Social Work. She also served as program chairman for the Montana Public Health Association at the May 1950 meeting in Billings and was elected president of that Association for 1950-51.

The Health Education Consultant is serving on the joint planning committee for the Workshop on Tuberculosis Nursing to be held in the spring of 1951. She is also secretary of the State League of Nursing Education.

The Health Education Consultant did some of the promotional work for the Industrial Hygiene Division in Billings during the winter and spring of 1949. She also took part in the health program of the 4-H conservation camp at Camp Maiden, Lewistown.

Health Education Materials and Publicity

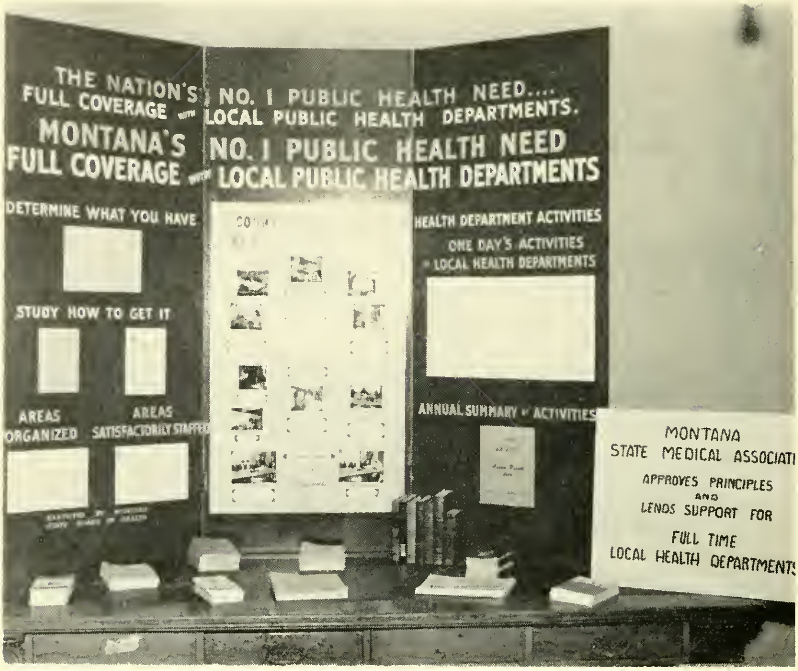
All news releases to the papers are released through the Division of Public Health Education. These releases are given to both the Associated and United Press who send them to most of the papers and radio stations in the State.

Beginning in December 1949 articles on health were released through this Division to the weekly newspapers in the State. These articles were prepared by the State Board of Health staff members as follows:

Belle C. Richards, M. D., "The Problem of Infant Deaths."
H. B. Foote, "The Rural Water Supply."
H. B. Foote, "Rural Sewage Disposal and Rural Electrification."
Edith Kuhns, "The Montana Premarital Law."
Marjorie Young, "The Inspection and Licensing of Hospitals."
Robert J. Munzenrider, "Hospital Survey and Construction Program."
K. Elizabeth Anderson, "Citizen Planning for Public Health."
Lita Korbe, "Public Health Nursing Field Visits."
Lucien Benepe, "Vital Statistics."
Belle C. Richards, M. D., "Crippled Children's Services."
Elton M. Andrew, "Food and Drug Protection."
W. F. Kimmell, M. D., "Tuberculosis Control Program."
Beatrice Hruska, "Health Education."

Other articles have been prepared for the Montana Parent Teacher Magazine, the Montana Education Journal, the News Letter of the State Directors of Health Education, the Great Falls Leader.

An exhibit illustrating the need for local public health departments was prepared and has been displayed at several meetings in the State.


THE NATION'S FULL COVERAGE WITH
NO. 1 PUBLIC HEALTH NEED....
LOCAL PUBLIC HEALTH DEPARTMENTS.
MONTANA'S FULL COVERAGE WITH
NO. 1 PUBLIC HEALTH NEED
LOCAL PUBLIC HEALTH DEPARTMENTS
DETERMINE WHAT YOU HAVE
STUDY HOW TO GET IT
AREAS ORGANIZED
AREAS SATISFACTORILY STAFFED
HEALTH DEPARTMENT ACTIVITIES
ONE DAY'S ACTIVITIES OF LOCAL HEALTH DEPARTMENTS
ANNUAL SUMMARY OF ACTIVITIES
MONTANA
STATE MEDICAL ASSOCIATI
APPROVES PRINCIPLES
AND
LENDS SUPPORT FOR
FULL TIME
LOCAL HEALTH DEPARTMENTS

Health Education Devices Used to Aid in Promotion of Public Health

Several new films were purchased and deposited in the State Film Library in the State Department of Public Instruction. Notices of new films are sent out to interested groups. These notices briefly summarize the film and also make suggestions as to how they can be used most successfully.

Pamphlets on many health topics are distributed on request through this Division, as are school health records.

Loan library service has been continued and a bibliography of books and pamphlets is maintained. Several new books have been added to the library.

Mimeographed articles have been prepared to give assistance in both school and community health programs. Some of these are:

Community Health Questionnaire
Radio Script on Local Public Health Departments
Health Instruction Survey Outline (School)
One Way to Begin a School Health Program
Values of Health Planning Committees
Public Health Facilities
Public Health Groups
Preparation of Exhibits
Marriage and Divorce Laws

In-Service Training

An in-service training program has been carried on for personnel of the Division. Those individuals who are working in the field of health education on the State level have formed an informal committee known as the State Health Educators. They meet together several times a year to exchange new ideas, technics, and information. This committee also serves as a means of coordinating the health education programs in the State.

Miss Evelyn Rahm, Health Education Consultant from the United States Public Health Service in District No. 9 at Denver, has been in the State several times during the biennium to give consultant service. Her contributions have been greatly appreciated and have been most helpful. Others who have assisted are Winfield S. Wilder, M. D., of the Montana Mental Hygiene Clinics, Helvie Boothe, Ph. D., of the Menninger Foundations, Dorothy B. Nyswander, Ph. D., of the University of California at Berkeley, and Miss Vivian Drenckhahn, Director of Health Education Service from the National Tuberculosis Association. Out-of-state meetings that have been helpful are the National Cardio-Vascular Disease Conference, the Rocky Mountain Health Conference, the Western Branch meetings of the American Public Health Association and the Northwest District meeting of the American Association of Health, Physical Education and Recreation.

PERSONNEL

There have been some personnel changes during the biennium. Miss Inga A. Hoem resigned as health education consultant on September 1, 1949. The position was vacant from that date until April 10, 1950, when Miss Beatrice Hruska was employed.

Miss Dora Young joined the staff as narcotic education consultant on July 1, 1949, when narcotic education became a State Board of Health function.

NEEDS

More adequate office space that is readily accessible to all other Divisions of the State Board of Health will facilitate services, and a room for a central library will also faciltitate services.

A bulletin published by the State Board of Health to be distributed to interested citizens throughout the State will be helpful in the health education program.

It is planned to develop more clear-cut policies for inter-divisional relationships.

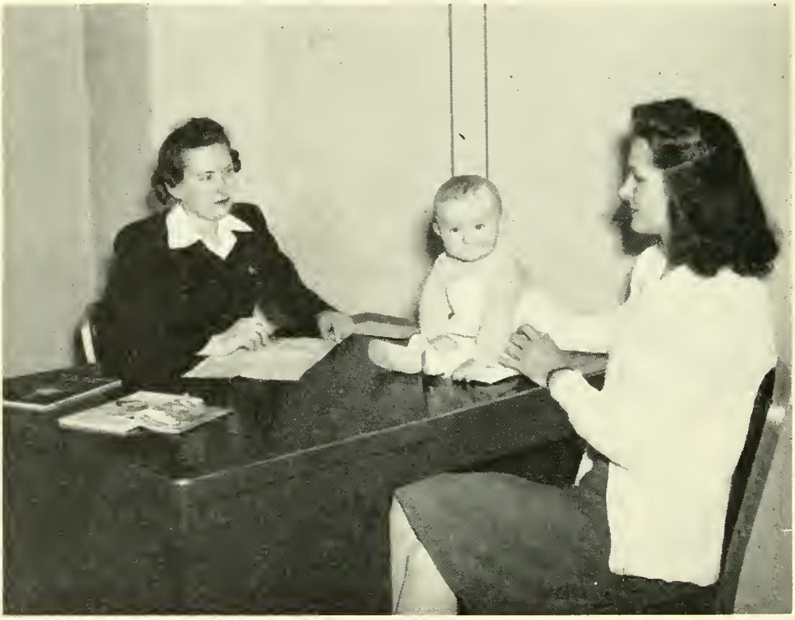
The State staff needs to be expanded and health educators are needed on the local level.

Since health deucation cannot function satisfactorily as a program in itself, the cooperation and assistance of other staff members and that of the personnel from other agencies and groups has been especially appreciated.

Directors
*Lita L. Korbe, R. N., M. A.
**Helen M. Murphy, R. N., B. S.

GENERAL INFORMATION

The State was divided into three districts for generalized consultant services for 14 months and into two districts for 10 months during the biennium. In special fields, the consultants served the entire State.



The Public Health Nurse Discusses Child Development With Mother

Nursing consultant services were used extensively for district supervision to all nurses participating in programs in the unorganized areas. This limited the consultant activities for all services whether in special fields or for the generalized nursing services. However, due to the shortage of available local supervisors direct supervision from the State office was the primary need.

District staff education conferences were organized in the four strategically located centers where a large percentage of the local public health nurses were able to attend. These centers were at Missoula, Great Falls, Butte and Billings.

According to the wishes of the local public health nurses, these conferences were devoted almost entirely to round table discussions of mental hygiene problems, except in the Butte area. In Butte, emphasis was also put on staff education programs in the field of Tuberculosis Nursing. Other interests which developed included the interpretation of the use of statistical information gained by using the 1938 American Public Health Association Appraisal and the 1946 Health Practice Indices. Quotas for admission to nursing services and for field visits were established. These served as a basis for a quantative evaluation of the services rendered.

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* Employed from August 15, 1949 to August 30, 1950
** Resigned September 30, 1948

The mental hygiene staff education programs were planned with the Directors of Mental Hygiene Clinic Services giving leadership and their respective staffs assisting. These programs proved extremely beneficial, aiding the public health nurses to do a more effective family health service.

The number of public health nurses at the end of this biennium is 51 in local public health services. This includes three local supervisors. The source of funds for these services are as follows:

Source	Number of Nurses
State	9
County	17
School Board	10
State and County	10
School, State and County	2
State and School	2
Local Tuberculosis Association	1

There are five nurses, the Director and four Consultant Nurses, on the State Staff of the Division of Public Health Nursing. This makes a total of 56 nurses.

There has been considerable personnel change on the State staff. During the period between Miss Helen Murphy's resignation as Director and the employment of Miss Lita L. Korbe, Miss Jeannette E. Potter and Miss Alice Marcella Fay both served as acting directors. Miss Potter was one of the consultants and Miss Fay was loaned to the State Board of Health by the U. S. Public Health Service. Miss Potter resigned from her position as Nursing Consultant August 1, 1949.

Miss Frances Seyler was employed as Orthopedic Nursing Consultant on November 15, 1949.

Miss Wava L. Dixon, Tuberculosis Nursing Consultant, Mrs. Edna M. Kuhn, Maternal and Child Health Consultant and Miss Daisy E. Prentice, Hospital Nursing Consultant have continued to serve in these capacities during the biennium.

Consultant services were available to other official and non-official agencies making a total of 67 nurses receiving assistance from the Division. These nurses are employed in 28 of the 56 counties in the State.

Montana† stands high among the states as to the number of staff public health nurses who have had academic public health nursing education. The greater part of them have had some academic education on University level. About fifty percent have had one year or more of public health nursing education, twenty-five percent have had less than one academic year and twenty-five percent have had no academic training except on-the-job orientation. The latter group is urged to obtain minimum public health nursing education by taking advantage of the educational stipends as early as possible during their work experience.

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† Facts About Nursing, 1949, Nursing Information Bureau, New York City

Public Health Nursing Education	Montana	U. S. A.
One Year or More	50 Percent	33 Percent
Less Than One Year	25 Percent	27 Percent
None	25 Percent	40 Percent

Activities in special fields included classes taught to student nurses on "The Public Health Aspects of Maternal and Infant Care" in five Schools of Nursing, on the "Control of Tuberculosis" in two Schools of Nursing and on "The Nursing Care of the Premature Infant" in eleven Schools of Nursing.

The Division of Public Health Nursing cooperated with other Divisions and Agencies. All of the cases in the register for the Division for Crippled Children have been reviewed and the register brought up to date. The Clinics have been planned each spring and fall and nursing has participated actively. The Division assisted in the over-all planning of the mass X-ray survey with special emphasis in carrying out the program on the Tongue River and Crow Indian Reservations in cooperation with the Regional Office of Indian Affairs. Assistance was given in four local areas to establish Well-Child Conferences. New lesson plans were prepared for student nurse classes on "The Nursing Care of the Premature Infant." In-service instruction was given to hospital staff nurses on better maternity care, acceptable nursery techniques and premature infant nursing care. In those areas where there were public health nurses, the activity was planned locally. The "Maternity Nursing Manual" was prepared and approved by the Maternal and Child Welfare Committee of the Montana State Medical Association.

Seventy-five percent of Montana's hospitals have instituted crib-side nursery care in their new-born nurseries.

A series of Maternity-Infant Seminars for smaller hospitals was held throughout the State. A workshop for obstetrical supervisors and head nurses of the three Deaconess Hospital Divisions was conducted at Montana State College School of Nursing.

Staff education programs in Maternal and Child Health and Tuberculosis Nursing were assisted in seven areas of the State, besides the individual conferences held with nurses in unorganized areas. Counties without public health nursing service were visited and conferences held with local medical welfare and school personnel.

STATISTICAL REPORT OF SERVICES

The following statistical tabulation of specific health services is included in this section because most of the personnel carrying on the work at the present time are nurses. Consequently, these figures reflect the volume of nursing services performed.

Communicable Disease Control	
Field Visits to Communicable Disease	11,629
Vaccinations for Smallpox	13,110
Immunizations for Diphtheria	
Under 1 Year of Age	1,397
2-5 Years of Age	2,827
Immunizations for Whooping Cough	
Under 1 Year of Age	1,470
2-5 Years of Age	4,227
Immunizations Rocky Mountain Spotted Fever	38,207
Venereal Disease Visits	156
Tuberculosis Control	
Nursing Visits	5,111
Tuberculin Tests	19,521
X-rays (including mass survey films)	10,150
Maternity Service	
Antepartal Nursing Visits	2,625
Postpartal Nursing Visits	4,623
Infant Service	
Field Visits (under 1 month of age)	4,130
Field Visits (1 month-1 year of age)	5,951
Office Visits	2,762
Pre-School Service	
Field Visits	10,592
Office Visits	3,412
School Health Service	
Examinations by Physicians	10,843
Examinations by Physicians (parents present)	2,930
Health Appraisals by Nurses	42,626
Field Visits by Nurses	16,833
Office Visits to Nurses	10,558
Crippled Children's Service	
Field Visits by Nurses	4,343
Office Visits to Nurses	750
Morbidity Service	
Field Visits by Nurses	2,922
Adult Health Supervision	
Field Visits by Nurses	2,894

IN-SERVICE EDUCATION

Two orientation programs were planned for new local public health nurses. All Division Directors, as well as the Directors in the State Department of Public Welfare and the Director of Vocational Rehabilitation participated. Field trips to the State Hospital at Warm Springs and the Sanatorium for the Tuberculous at Galen were included in these orientation programs.

Institutes on Cancer were held in three areas of the State: Missoula, Great Falls and Billings.

A conference on Cerebral Palsy was held at the Cerebral Palsy

Center in Billings in cooperation with the Montana Chapter of the National Society for Crippled Children and Adults.

Two consultants attended a two-week "Workshop on Supervision" in Bismarck, North Dakota.

One nurse was sent to the Rheumatic Fever Center at Ogden, Utah for an intensive one-week's observation in preparation for a position in the Rheumatic Fever Program in Cascade County.

Ten supervisory staff conferences were held in the state office for consultants, local supervisors and senior public health nurses with supervisory responsibilities.

Two local public health departments aided in programs for field experience in public health nursing personnel preparing for positions in local health services.

Meetings attended by one or more staff members included National Tuberculosis Association, American Nurses Association, State Directors, American Public Health Association, Bi-Regional Conference on "Use of Consultant Service and Long-Term Care of Convalescent Children," sponsored by the Children's Bureau, and the Montana Public Health Association.

Committee participation has been through the School Health Commission, Teacher Training Committee for Health Education, Committee on Public Health Nursing Affiliation, Health Education Sub-Committee and the Physicians in Schools Conference.

Thirteen nurses have benefited by stipends to increase their educational background in public health nursing and two hospital nurses had further education in the care of the premature infant.

NEEDS

Approximately 60 additional public health nurses are needed to staff the local areas to meet minimum standards.

Increased personnel for supervision and consultant service.

Continued study for reclassifications and compensation scales.

Development of field experience for orientation of new personnel and the training centers for "on-the-job" training.

Improved staff education on both the local and state level.

Analysis of public health nurses' participation in the programs to determine the need for changing emphasis if required.

DIVISION OF SANITARY ENGINEERING

H. B. Foote, C. E., Director

***W. M. Cobleigh, E. M., A. M., Consulting Engineer**

The following activities comprise the principal work of the Division of Sanitary Engineering:

Bacteriological and chemical examination of water samples of both public and private supplies and for various Federal Agencies

Field inspections of public and private water supplies

Field inspections of sewage disposal systems

Field inspections and examination of samples in stream pollution problems

Field inspections of public swimming pools

Inspection of plans for public water supplies

Inspection of plans for public buildings

Inspection of plans for public sewage disposal systems and for waste disposal from industrial plants

Inspection of plans for public swimming pools

Secretaryship of State Board of Plumbing Examiners.

The Sanitary Engineering Division Reported 12,653 Water Samples and Reviewed 162 Plans for School Buildings and Sanitary Facilities

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* Dean (Emeritus) School of Engineering, State College, Bozeman

LABORATORY TESTING OF WATER

The testing of samples of water makes up the bulk of the laboratory work. A check upon the condition and operation of public water supplies is obtained by frequent routine bacteriological tests. In order that each supply will receive proper attention at regular intervals, a calendar is used which lists for each week the cities to which sampling equipment is to be sent. By this calendar, plants giving the water relatively complete treatment, such as filtration and softening, are sampled twice a month. Plants in which chlorination is the only treatment are sampled once a month. Other plants are sampled from four to six times a year, the frequency depending upon the character of the supply or more particularly the source of the water. Those ground waters which appear to be the most constant in quality are sampled less frequently. There are in Montana several public water supplies which are given no treatment, although taken from surface sources. These are watched carefully and the sampling is consequently somewhat more frequent.

The standards of the U. S. Public Health Service, which are applied particularly to waters used in interstate traffic, promulgated by the Surgeon General of the U. S. Public Health Service on February 19, 1946, call for a minimum of one sample each month from each water supply. The total number of samples from each supply per month depends not upon the source and type of treatment, but upon the population served. This requires, therefore, an acceleration of sampling of these particular supplies.

In view of the requirements for larger numbers of samples, it is probable that the division will be obliged to test many public water supplies by transmitting samples through the mail.

In the testing of water from the many private supplies, samples are transmitted by mail in mailing tubes, a stock of which is kept on hand. In the laboratory such samples are tested only for bacteria of the coliform group, although they are also observed as to their physical quality, the turbidity being measured in comparison with silica standards.

In the case of the Indian and National Park Service work, as well as other Government work, the samples have been sent to the laboratory under Government frank or bill of lading.

There are now in Montana 118 cities, towns, and other communities, and eight state-owned institutions with public water systems. Of the total of 152 water supplies furnishing water to these systems, 94 are from ground sources, and 58 from surface sources. The population served in these communities and State institutions is approximately 323,000 or 55 per cent of the total population of 587,000 as shown by the 1950 census for the State of Montana.

Through an arrangement with the State College at Bozeman, the data obtained from chemical analyses of water samples have been sent to them for interpretation from the standpoint of the suitability of such waters for irrigation, in cases where such information is requested. Inasmuch as the same analytical data can be used for interpretation from the standpoint of domestic use and irrigation use, this arrangement eliminates much duplication of analyses. The same may be said of arrangements with Dr. H. F. Wilkins, of the State Livestock Sanitary Board, relative to the suitability of waters for stock watering purposes.

In any bacterial testing of water, the laboratory follows the standard methods of the U. S. Public Health Service. In the chemical analyses, either these standards or those of the Association of Official Agricultural Chemists are followed. Our laboratories are well provided with both equipment and supplies. All lactose broth tubes showing any percentage of gas are inoculated into the Brilliant Green Bile confirmatory medium.

The following tabulation shows the amount of laboratory work done during the past twenty-four months:

	Bacteriological	Chemical	Pct. of Tot.
Samples from Public Water Supplies	8,958	72	71.3
Samples from Private Water Supplies	1,774	539	18.2
Samples from Tourist Camp Water Supplies	166	0	1.4
Samples from School Water Supplies	357	12	3.0
Samples from United States Government	403	22	3.4
Samples from Miscellaneous Sources (including those from stream pollution studies)	259	91	2.7
Totals	11,917	736	100.0
Grand Total			12,653

FIELD ACTIVITIES

It is the intention and endeavor of this Division to see each public water supply once a year, and the larger ones—especially the purification plants—oftener. Frequently it is necessary to return to a given city to make follow-up investigations or to investigate special conditions where they may arise. When investigating these public water supplies, the city or water company officials are interviewed and the trips and inspections are made in their company. The owners and operators of public water supplies in Montana are aware of the necessity of maintaining proper sanitary conditions, and excellent cooperation is usually found. In this way the maximum benefits to be derived from inspections are obtained. For the most part, too, the men in charge of the public water supplies in this State are awake to the modern trends in water treatment and water quality.

When in a given city, private water supplies, municipal sewer systems and swimming pools are visited and inspected as required.

PUBLIC WATER SUPPLY IMPROVEMENTS

There have been some improvements in public water supply systems in Montana during this biennium. In many Montana communities the distribution systems have been extended. Especially in the case of Helena is this true, although most of the work here has been in the relaying of the distribution system.

At the State School at Boulder, two new wells were drilled and equipped, and are now furnishing the institution with all of the domestic water needed.

At Glendive, the large settling basin was completed, as was the new stand pipe at Hardin.

A new concrete storage reservoir has been constructed on the water supply at East Helena.

A well to augment the city supply at Belgrade was completed.

A new water filtration plant was placed under construction at Cut Bank, as was one at Havre. The same source of water, namely Cut Bank Creek, is to be used at Cut Bank, while the Milk River is to be the source of water at Havre.

A new gravity flow line has been laid at Denton, which connects the springs to the distribution system.

At Choteau, a spring was tapped and a pipe line laid to augment the water supply.

At Forsyth, a new filter was equipped to increase the capacity of the filtration plant.

A water supply system has been constructed and placed in operation at Brady. The source of water is an irrigation canal. The water is stored in a large reservoir from which it is pumped after chlorine is applied for disinfection.

Plans for a water supply system at the site of the Tiber Dam, south of Chester, have been approved.

The old steel reservoirs in Great Falls have been covered. These are on the distribution system in the Boston Heights area.

Other improvements have been planned but many of them have not been completed as yet.

SEWER SYSTEMS

There has been a relatively active program in improvements in municipal sewage systems and in the treatment of sewage. Extensions to city sewers have been made in nine cases.

The sewage treatment plant at Chinook and that at Bozeman were placed in operation in the Fall of 1949. During this year, the plants at Dutton and Ekalaka were also placed in operation, as was also the sewer system at Dutton.

The sewage treatment plant at Billings was completed to the point where it could be used and was put in operation.

The sewage treatment plant at Havre was practically completed by June 30, 1950.

STREAM POLLUTION STUDIES

The work of studying stream pollution problems was carried on with an increased personnel during a part of this biennium. A number of conferences have been held with State and Federal officials, and a considerable volume of information has been collected relative to the various industries in the State.

The two refineries at Billings were put into operation in 1949. These include modern provisions for industrial waste treatment, to the end that the receiving stream will be properly protected.

For the fiscal year 1950, $9,600.00 was received as a grant from the Federal Government to carry on studies relative to industrial wastes. With this money, an increased travel schedule was possible and a sanitary engineer was employed, as was also a stenographer. Some office equipment was necessary, and a car and some mobile laboratory equipment were purchased.

In connection especially with the water pollution work, one trip was made to Omaha, two trips to Kansas City, two trips to Portland, and one trip to Spokane. The meetings attended were as a member of the engineering Committee of the Missouri River Health Council and of the Pacific Northwest Water Pollution Control Council.

The Pacific Northwest Water Pollution Control Council met in Missoula, Montana, on April 19, 1950. At this meeting all members of the Sanitary Engineering Division directly connected with the water pollution work were in attendance.

MISCELLANEOUS ACTIVITIES

The Director and members of the staff have been called upon to take part in various conferences and meetings. The Director assisted in an orientation course for public health nurses, talked to representatives of State and Federal agencies relative to Public Law 845, assisted in instruction to Safety Engineers of the Bureau of Reclamation, conferred with the Fish and Game Commission relative to stream pollution, addressed the Executive Committee of the Western Wildlife Association at Missoula, addressed the American Society of Civil Engineers at Helena, attended a conference on "The Physician and School Health," and worked as Chairman of a Committee appointed by the Executive Officer to study the Merit System job specifications and personnel of the State Board of Health staff. The Director attended two sessions of the Conference of State Sanitary Engineers in Washington, D. C., in 1949 and 1950.

The Assistant Director attended a conference in Washington, D. C., called by the Atomic Energy Commission, addressed a school education workshop in Billings, and spent several days in Dillon as a witness in a case involving a nuisance. He attended a camp as a Reserve Officer in the summer of 1949.

The Consulting Chemical Engineer addressed the American Chemical Society meeting in Billings.

One of the Chemical and Sanitary Engineers addressed the Executive Committee of the Montana Missouri River Basin Council.

The Sanitary Engineer addressed the Safety Engineers of the Bureau of Reclamation in January of 1950.

CERTIFICATION OF WATER SUPPLIES

The U. S. Public Health Service has assisted the State Board of Health in inspections necessary for certification of waters used on inter-state carriers. The work of these officials has largely been in the inspection of watering point sanitation. The State Board of Health has made the water supply inspections. In 1948, 18 reports and recommendations were made, calling for 16 approved and 2 provisional certificates. In 1949 reports and recommendations covering 18 supplies were made—16 of them were approved and 2 were provisional. The work for 1950 is not yet completed.

TABULATION OF FIELD WORK

The following tabulation shows the amount of field work done during the past twenty-four months:

	No.	Pct. of Tot.
Inspection of Public Water Supplies	260	45.5
Inspection of Private Water Supplies	12	1.5
Inspection of Sewage Disposal Systems	145	25.7
Inspection of Swimming Pools	13	1.6
Miscellaneous Inspections	142	25.7
*Totals	572	100.0

* Close approximation (5 months record not complete)

PLUMBING

The State Legislature, meeting in 1949, enacted Chapter 203 which is an Act to establish a system of State examination for Master and Journeyman Plumbers. The law states "That one of the members of the Board shall be the Director of the Division of Sanitary Engineering of the Montana State Board of Health or his duly designated representative, who shall be an ex-officio member and Secretary of the State Board of Plumbing Examiners. The office of the Director of the Division of Sanitary Engineering of the State Board of Health shall act as the office through which all business of the Board shall be transacted."

In conformity with the provisions of this law, the Director has acted as the Secretary of this Plumbing Board. This has added materially to his duties since there has been a relatively large volume of correspondence and 17 meetings have been held for the conduct of the business.

It has been found necessary to engage the services of an Assistant Secretary who is bonded and cares for all of the license fees and the office details.

Since the State Board of Health is connected with the examination and licensing of plumbers by the State, this work constitutes one more activity for this Division and this must be taken into consideration when personnel requirements are considered.

By July 20, 1950, 173 licenses were issued to Master Plumbers and 357 licenses to Journeymen Plumbers.

It appears desirable that the law be amended to cover plumbers in the entire State. The present law affects only those plumbers in incorporated cities and towns of one thousand or more inhabitants. Also, it appears desirable that a law be adopted authorizing the State Board of Health to adopt and enforce a State Plumbing Code. The present law provides that this plumbers' examining board shall be self-sustaining.

RODENT SURVEY

Because of the continued evidence of rat infestations in various Montana counties, it was deemed desirable that a survey be conducted in Montana to determine if and where rat infestations were found. Upon solicitation to the U. S. Public Health Service, Mr. Wm. H. Slaughter, Rodent Control Specialist, was assigned to this work. His survey started as of April 1, 1950, and by June 30, 1950, he had surveyed eight counties, starting his work in the eastern part of the State. By that time he had discovered rats in considerable numbers in Daniels, Dawson, Fallon, Fergus, Richland, Roosevelt, Sheridan and Wibaux Counties. This situation had been suspected through work by other investigators, especially of the Fish and Wildlife Service.

There is no rat-proofing in construction or operation in Montana. Open garbage dumps are the usual methods of garbage disposal. The careless handling of garbage and the presence of feed on which rats exist seem to be the prime factors in infestations.

Fergus County has been plagued with rats for many years, but the infestations in the north and east part of Montana seem to have migrated in from North Dakota and possibly from Canada, since information collected shows that there have been rats in all North Dakota counties for many years and in the Province of Saskatchewan, at least since 1927.

It is the intention, if finances allow, that the Rodent Control Specialist's services will be continued until the whole State is surveyed. It is also hoped that by that time a program can be outlined whereby the people in our various communities will be instructed in control and eradication methods. It is certain that for the largest communities improved methods of garbage disposal must be considered as essential if these rodents are to be controlled.

OFFICE WORK

The office work consists of the writing of reports on all laboratory work done, or field investigations made, and in replying to letters of inquiry relative to matters which concern this Division. It also includes the inspection of plans which are submitted for various public water supply and sewage disposal systems, school buildings and swimming pools.

FEES

The only source of income collectible by this Division is the annual fees levied against public water supplies.

By July 1, 1949 (fiscal year 1948-1949) $5,502.50 had thus been collected, and by July 1, 1950 (fiscal year 1949-1950) $2,827.00 were collected, making an average of $4,165.75 per year.

This money has been deposited with the State Treasurer as received.

EXAMINATION OF PLANS

A total of 162 plans were examined during the past 24 months, classified according to the following tabulation:

New (public) water supplies, improvements and extensions to existing systems	29
New (public) sewer systems and extension (including treatment plants)	33
New school buildings and additions to existing buildings	81
Miscellaneous (public buildings—industrial wastes)	19
Total	162

STUDY OF NITRATES IN WATER

For many years previous to the development of the bacteriological technique for water examination, nitrates were sought in our water supplies for the significance which they held in the sanitary situation. No consideration was given the nitrates during those years so far as their significance in the production of cyanosis in infants was conconcerned. The relationship between nitrates and cyanosis was not known at the time. During the years following those early examinations, the bacteriological technique was perfected and this was practically the sole examination of waters, so far as the sanitary features were concerned.

Since the knowledge of relationship between nitrates in water and cyanosis, due to methemoglobinemia, has been brought to our attention, routine examinations for nitrates are now being made.

No cases of cyanosis have been brought to our attention as having occurred in Montana. However, it has been a practice to call attention to this possibility where nitrates are found in excess, when reports are made to the owners or to the physicians who are interested in the water. It is anticipated that work will continue on this basis.

SCHOOLS FOR WATER AND SEWAGE PLANT OPERATORS

Previous to the war, short schools were held for water and sewage plant operators. These were generally held in connection with the meetings of the American Water Works, Association, Montana Section. They were, however, discontinued during the war because of the shortage of personnel and heavy schedule due to the war activities. These schools were a cooperative activity between the Montana State Board of Health and the State College at Bozeman. The engineering division of each were involved.

Following the cessation of hostilities, the Montana Section, American Water Works Association, and the Montana Sewage Works Associations voiced their desire that the schools be resumed. In conference with the State Board of Health officials and members of the teaching staff and administrative officers of the State College, it was determined that the school would be resumed. As a consequence, Dean W. M. Cobleigh was requested to take charge of the organization and details.

The first school was held in February 1948 at the State College Engineering Building. The school was held during four days, at a time it was felt that the larger number could be in attendance. While the attendance was not as large as anticipated or hoped for, the interest exhibited was satisfactory in the extreme. The faculty of the State College cooperated with enthusiasm, and the administrative officers were convinced that it was a very worthwhile project for that institution. Dean Schilling, of the Engineering Division at the State College, and the Director of the Division of Sanitary Engineering are the heads of the divisions involved. Dean W. M. Cobleigh is the prime organizer and will be the leader when the school is in session.

Because of the severe winter weather in February of 1949, the school was not held, but was postponed until November of that year. At this school there were 38 in attendance.

Another school is planned for the fall of 1950. It is planned to contact all of the managers and operators of the public water and sewage system facilities in Montana, in the expectation of securing a strong support for this school.

MONTANA SECTION, AMERICAN WATER WORKS ASSOCIATION

Our Section of this National Association is active. Its 24th and 25th annual sessions were held in Great Falls, Montana, in 1949, and in Missoula, Montana, in 1950. The next meeting is to be held in Helena in 1951.

MONTANA SEWAGE WORKS ASSOCIATION

This Association, formed in 1944, held its 5th annual meeting in Great Falls, Montana, in 1949, and its 6th annual meeting in Missoula, Montana, in 1950. Its 7th annual meeting will be held in Helena in the spring of 1951. The Montana Association is a member of the Federation of Sewage Works Associations, a nation-wide organization. The Director of this Division is Secretary-Treasurer.

FOR THE FUTURE

During the coming years it is anticipated that this Division will continue the activities so far found by experience to be fully justified and should be ready to extend its activities as demanded by conditions in the State as they develop and change.

Such activities as the sanitary surveys, work on fluorine content of waters, the testing of sewage treatment plants to determine their efficiencies, the technical instruction of water and sewage plant operators and the assisting of the general public through circulars of information concerning sanitation are among the more important activities seen at this time.

The present staff is kept constantly busy and is the minimum which should be maintained if the services are to be satisfactorily performed.

CONCLUSION

In concluding this report, it is our pleasure to express appreciation for the cooperation given this Division by the other Divisions of the State Board of Health, and also the valuable assistance given us by W. M. Cobleigh, Dean Emeritus of the State College of Bozeman. The engineers of the U. S. Public Health Service have also given us valued assistance whenever it has been requested. For this personnel of the Division are grateful.

DIVISION OF TUBERCULOSIS CONTROL

*W. F. Kimmell, M. D., Director
**L. J. Lull, M. D., M. P. H., Acting Director

The obvious goal of this division, as of all agencies dealing with tuberculosis control, is the complete eradication of tuberculosis. This objective is constantly in mind and all aspects of the program are directed toward this accomplishment. However, until the advent of some specific "miracle" drug which will definitely cure tuberculosis all efforts must be directed toward the production of as rapid a decline in the morbidity and mortality from tuberculosis as is possible with the weapons now at our command.

This can best be accomplished by the following means, which may be considered the necessary components of an adequate tuberculosis control program.

DIRECT SERVICES
- **Case Finding**
- **Case Supervision**
- **Other Uses of Funds Appropriated for Tuberculosis**

INDIRECT SERVICES
- **Treatment and Isolation**
- **Socio-economic and Rehabilitation**
- **Research**
- **Health Education**

In the report to follow, those activities and services where more active participation is taken, particularly case finding and case supervision, will be discussed at greater length, while the remaining activities will be dealt with in accordance with their relative importance. An attempt will be made to enumerate and evaluate accomplishments and services rendered during the biennium and to make recommendations to meet the needs of the future.

SERVICES AND ACTIVITIES
DIRECT SERVICES

Case Finding

The discovery of persons having tuberculosis is one of the most important services rendered by this division, and one of the most important activities of a tuberculosis control program. Although finding those with the disease, followed by hospitalization, isolation and treatment, will obviously result in the greatest step towards eradication of the disease, discovery in itself will accomplish a great deal. From a public health standpoint, as well as an economic, discovery of the apparently recent evidence of the disease, as well as the older far advanced disease, will result in progress towards prevention of spread of the disease. The group with far advanced disease, which generally serve as the greatest reservoir of infection, if known, can be hospitalized or isolated preventing the transmission of the disease to others. The person with early minimal tuberculosis, if promptly and

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* Employed January 1, 1950
** Resigned December 31, 1949

Tuberculosis Control Office, State Board of Health

adequately treated, can be more readily cured and quickly restored to economic productivity and his former place in society. If allowed to advance, the chances become less for a complete cure, as advanced stages of the disease often defy therapeutic measures and the person if not properly cared for may become a permanent economic liability as well as being a public health menace.

X-ray still remains the single most important method for the discovery of tuberculosis, and with the adoption of the photofluorographic mobile unit, it is possible to screen large numbers of people economically and rapidly.

Since 1946, Montana has operated two mobile x-ray units (one full time). This has been a joint venture of the State Board of Health and the Montana Tuberculosis Association. During the biennium 1948-1950, 132,420 miniature x-rays were taken by these units. From the preliminary examination of the miniature film 2,310 persons were referred to their private physicians for further examination. Of the number referred 1,346 were thought to have tuberculosis and 964 other pathology. 298 of the referred cases were reported as definite new cases of tuberculosis. With the exception of Silver Bow, all of the counties in the State have been surveyed twice since the inauguration of the program in 1946. During the first part of the biennium chest surveys were conducted in 31 counties and during the last half of the biennium 26 counties were visited by the X-ray unit.

In order to plan and execute a case finding program, extensive planning and considerable personnel are required. In the field operation, two persons are required to operate a single unit for the actual taking of films. In addition to this, health educators and field organizers are required to thoroughly plan and organize the community prior to the arrival of the X-ray unit. In the Tuberculosis Control office, the full-time services of over four persons are required to properly handle the voluminous correspondence, reports, statistical data, and processing the films taken during the survey. Considerable follow-up correspondence is also necessary to obtain the reports of the examinations made by private physicians following the survey. During the past two years, only two persons have been employed full-time by the State Board of Health in operating the mobile X-ray units. As a part of the cooperative effort, a health educator and field organizer were supplied during a portion of the biennium by the Montana Tuberculosis Association. At the termination of the biennium, only the field organizer remained in the program, and since June 30, 1950, the driver technician trainee has also resigned.

Although the discovery of tuberculosis is the prime object of the case finding program, the fact should not be overlooked that other benefits are derived from the mass chest survey procedure. It is inevitable that during the process of a community wide survey other diseases of the chest will be encountered. Heart disease, cancer, and silicosis are findings that are frequently observed. In those cases where the diagnosis of heart disease, cancer or silicosis was previously unknown, early diagnosis and treatment may result in either saving or prolonging life.

Case Supervision

Case supervision and the maintenance of a central case register containing the names and pertinent information on all cases of tuberculosis reported to the State Board of Health is a service supplied by the Division of Tuberculosis Control. Benefits are of direct value to everyone concerned, patients, physicians and persons in contact with tuberculosis patients. By means of periodic queries, important information, including the place of treatment (whether sanatorium or home), x-ray examinations, sputum studies, and other pertinent information, are obtained from the sanatorium or attending physician. When this information cannot be obtained from an attending physician, the local health officers and public health nurses become the only source of information. By this means, assistance, when needed, can be given to those individuals requiring periodic examinations, and those with active disease receiving treatment in the home can be properly instructed and supervised in regard to their relationship with other members of their household and the community. Accurate up-to-date information on the clinical status of the patient also makes possible the enforcement of Public Health Laws, Rules and Regulations where the patient and his mode of living constitutes a possible public health menace.

In order to maintain an effective case register, considerable time, effort, and extensive, easily accessible record systems are required. Also, the full cooperation of the local physician, local health officer and nursing service is required.

Too much emphasis cannot be placed upon the importance of maintaining an effective case register as the need is more or less in direct proportion to the number of known active cases of tuberculosis receiving treatment in, or waiting in the home for a hospital bed to be available. At the expiration of the biennial period, approximately 1,100 names were contained in the register requiring periodic query. This number includes all cases reported to the State Board of Health; those being treated in the home as well as the sanatoria, both active and inactive, and extra-pulmonary as well as pulmonary. After a person is once reported to the case register, regardless of whether active or inactive, the case is followed for a minimum of two years. If at the the expiration of this period of time, the patient still remains arrested or inactive and has been under adequate medical supervision, the case is placed in the closed file where it will remain unless attention is brought to the case as being reactivated. On June 30, 1950, there were approximately 146 cases listed in the register as definitely active and receiving treatment in the home. On the same date, 231 were indicated as being treated in the State Sanatorium at Galen, Veterans or Indian Service Hospitals.

Other Uses of Funds Appropriated for Tuberculosis

Out of the total appropriation for Tuberculosis Control, direct financial aid was furnished to the following:

Salary and expenses of Tuberculosis Consulting Nurse.

Salary of Nurse in Silver Bow County Tuberculosis Association and X-ray Technician for five months of the biennium.

Salary of one Laboratory Technician in the Hygienic Laboratory.

INDIRECT SERVICES

The more important and direct services, Case Finding and Case Supervision, having been discussed more or less thoroughly, the following, although of comparable importance, will be mentioned briefly:

Treatment and isolation are not direct services of this division as the private physicians and sanatoria are responsible for carrying out the necessary therapeutic procedures. However, case register information and follow-up procedures after a community-wide chest survey are directed towards insuring those persons known or suspected of having pulmonary disease of having a thorough examination, treatment and hospitalization when indicated. Where hospitalization is not available or home treatment is preferred or insisted upon, persons with active disease can be isolated with supervision and treatment given in the home.

The socio-economic aspects of tuberculosis have far-reaching implications, which for the most part are delegated a place of minor importance in the entire United States as well as Montana. Rehabilitation of the person with tuberculosis, in addition to providing the patient with a means of livelihood consistent with his physical handicap, also indirectly exerts a therapeutic effect in assuring a certain degree of financial security following a prolonged period of hospitalization and treatment. Cooperation with the State Bureau of Vocational Rehabilitation, and the promotion and advocation of rehabilitation practices are encouraged and assisted. Another very important factor to be considered concerns the provision of life necessities for the family of a person disabled with tuberculosis. Other than the generally inadequate help received from various welfare agencies, definite provisions are not made for the dependents of tuberculosis patients. Financial assistance has a dual purpose, in that a person when first acquainted with the fact that he has the disease, will be more likely to accept the more or less long period of unproductivity in the first place, and therapy administered will be more apt to be effective if the patient knows his family is provided with the necessities of life.

In the field of health education, literature covering various phases of the disease is available upon request. Consultive service on technical and medical aspects of the disease is also available to other divisions of the department of health, other State agencies and local health agencies. Conducting a community mass chest survey throughout the State inadvertedly provides a very potent educational instrument in itself, in that it emphasizes the need for periodic chest X-rays as well as complete physical examinations.

In the field of research, although not participated in directly, assistance is given in every way possible. This is best accomplished by the compilation of appropriate statistical data which makes possible periodic evaluation of the program, and the effectiveness of the various phases of the program.

CONCLUSIONS AND RECOMMENDATIONS

Although a great deal has been accomplished, a great deal still remains to be done. In past years, Montana has followed the general trend in the United States in the slow, but steady, decline in the morbidity and mortality rates from tuberculosis. (Table I). Emphasis on the expansion of case finding procedures has undoubtedly played an important role in contributing to this decline.

In evaluating the case finding program in Montana, it is obvious that quite a large number of persons have presented themselves for an x-ray of the chest, and a great deal of territory has been covered in a relatively short period of time. In view of the large area involved with a sparse distribution of population, this constitutes a major accomplishment. However, in reviewing the percentage of population x-rayed in the various communities, it is also obvious that the surveys conducted have not been thorough, as the actual percentage x-rayed has been low. Also, with a few exceptions, enough effort has not been concentrated on those areas within the State with the highest incidence of tuberculosis. (Table I). The Indian population and Silver Bow County together accounted for over 50% of the deaths attributed to tuberculosis in 1949!

Therefore, in order to accomplish the desired objective of more thoroughly surveying those areas containing the greatest amount of the disease, additional equipment and personnel are necessary. A portion of this additional equipment was acquired during the latter part of the biennium, but the need for additional field personnel still remains. Additional personnel are urgently needed in the field to assist in field organization, publicity, and health education. Also in order to operate two mobile units full-time, a technician supervisor, two full-time technicians, and two full-time assistant drivers are the minimal personnel required to conduct an acceptable case finding program for the State of Montana. In view of the large number of counties without nursing services every effort should be directed toward establishing full-time local health departments. Until this is done some direct nursing service may be required from the State Board of Health.

With regard to case supervision, every effort will be made in the future to improve and increase this service, and it is hoped that addition and expansion of local health facilities will complement this activity and make possible more thorough supervision of those patients being treated and observed outside the sanatoriums. It is also hoped that with the provision of increased beds for the treatment of tuberculosis, including Indians, the number of persons with active disease in the home will be greatly reduced. This will undoubtedly be accomplished in part, although the total number of beds to be available under present expansion plans still will not provide an adequate ratio of beds to annual deaths from tuberculosis. A tuberculosis control program cannot hope to succeed as long as any person found to have the disease and who is willing to accept hospitalization and treatment, has to wait for a bed in a sanatorium or hospital.

Whenever possible, it will be the aim of this division to foster and promote any activity, service, legislation, or legitimate plan, that will assist in the over-all health program, as well as the tuberculosis control program. Justifying the expenditure of large sums of money should not be difficult, for it is only by the provision of adequate funds and personnel that future generations can be relieved of the physical and economic losses due to tuberculosis.

In concluding this report, the sincere appreciation of every member of this division is extended to all divisions of the public health department, other State departments, and voluntary agencies. The Montana Tuberculosis Association should receive special commendation as the success so far of the tuberculosis control program has been largely dependent upon their support and cooperation.

TUBERCULOSIS DEATHS PER 100,000 POPULATION

Table I

Year	Death Rate per 100,000 Pop. U. S.	Death Rate per 100,000 Pop. Mont.	Total Deaths White Mont.	Death Rate per 100,000 Pop. White Mont.	Total Deaths Indian Mont.	Death Rate per 100,000 Pop. Indian Mont.
1939	47	42.8	176	32.5	52	509.5
1940	46	40.2	172	31.7	48	282.4
1941	44	35.8	149	27.4	48	279.1
1942	43	34.8	133	24.5	58	333.3
1943	42.6	35.5	130	23.9	59	335.2
1944	41.3	35.9	113	25.3	49	275.3
1945	40.1	33.2	127	26.3	38	211.1
1946	36.4	30.2	96	19.9	50	277.8
1947	33.5	27.0	88	18.3	44	244.4
1948	30.0	25.7	87	17.7	41	227.8
1949	*26.1	20.8	74	14.7	33	165.0

* Provisional figure

BUREAU OF VITAL STATISTICS

Lucien L. Benepe, State Registrar

June 1, 1950, marked the 44th anniversary of the creation of the Bureau of Vital Statistics in Montana. It was established for the central registration of births and deaths, for legal, sanitary and statistical purposes. The legislature of 1943 repealed the original act and re-enacted the present law, which includes not only central registration of births and deaths but also for stillbirths, marriages, divorces, annulments, adoptions, legitimations and provides for recording of delayed records, (those registered six months or more subsequent to the event). At the present time, there are more than three-quarters of a million records indexed and filed in a fire-proof vault in the Health Department, summed up as follows: Births 443,156; deaths 230,891; marriages 54,908; divorces 14,742, and delayed births 45,000—Total 788,697.

800,000 Records are Now in This Fire-proof Vault

GENERAL SUMMARY

	1948		1948	1949	
	Mont.	Rate	U. S. Rate	Mont.	Rate
Births	14,992	25.7	24.2	15,359	26.3
Deaths	5,873	10.1	9.9	5,883	10.1
Marriages	7,131	12.2	12.4	6,981	11.9
Divorces	2,090	3.6	2.8	1,995	3.4
Infant Deaths	457	30.5	32.0	458	29.8
Maternal Deaths	13	0.9	1.2	16	1.0
Stillbirths	228	15.2	20.6	231	15.0

This biennium is the first time the non-resident births and deaths have been incorporated into the State totals, i.e., the births and deaths of Montana citizens who died in other states and babies born to resident mothers in other states have been been allocated back to their places of residence in this State, and likewise, when non-residents die or babies are born to non-resident mothers, the records are deleted from the Montana totals. There is an interchange of birth and death records among all the states for this purpose.

The 15,359 births for Montana in 1949 set an all-time record while the 14,992 for 1948 is second high. The birth rates for these two years are probably the highest ever experienced, as the immediate preceding years the rates, while higher, were calculated on an underestimated population.

There was only a difference of ten in the total deaths reported for the two years, and they are the highest number of deaths for any years except the influenza year of 1918, when 8,985 deaths occurred. The rate of 10.1 per 1,000 of population compares favorably with the national rate of 9.9 in 1948.

Marriages continue to decline from the high point reached in 1946, when 12,974 marriages were reported, with an all-time high rate of 25.9 per 1,000. Divorces continue to decline also from the high point of 6.4 of 1946. The infant death rate, (infants under one year per 1,000 live births), reached an all-time low in 1949 with 29.2. It is slightly less than three under the national average of 1948. The maternal deaths, (deaths in childbirth per 1,000 live births), rose from 13 in 1948 to 16 in 1949, the rate of 1.0 per 1,000 live births is still under the national average. There were only three differences in the stillbirths for the two years, and the rates are five per 1,000 live births under the national rate of 1948.

POPULATION

Preliminary figures of the 1950 Federal Census were released July 1, 1950. Montana's population in these provisional figures as of April 1, 1950, is 587,196 compared to 559,456 in 1940, a gain of 27,740. Twenty counties showed gains, while 35 counties show losses, and Sanders County was exactly the same in both counts. Only seven towns and cities over 1,000 population lost in the ten years while 41 gained. Generally speaking, the northwest section of the State increased, while the northeast section and central section decreased. Only five counties in the eastern half of the State showed gains; namely, Yellowstone, Rosebud, Custer, Dawson and Richland.

The counties with the greatest percentage gain were: first, Yellowstone, with 35.4%; second, Flathead 29.4%; third, Cascade 24.8%. The greatest loss occurred in first, Valley 25.4%; second, Phillips 19.6%; and third, Madison 19.0%. There are three cities over 25,000; first, Great Falls 39,001, gained 30.3%; second, Butte 32,904, lost 11.3%; and third, Billings 31,724, gained 36.4%. Four cities are now between 10,000 and 25,000; namely, Missoula 22,320, gained 21.0%; Helena 17,498, gained 16.2%; Bozeman 11,252, gained 29.9%; Anaconda 11,221, gained

2.0%; while six cities are between 5,000 and 10,000; Kalispell 9,694, Miles City 9,180, Havre 8,094, Livingston 7,667, Lewistown 6,540 and Glendive 5,235.

Following are the figures from the preliminary Census count by counties, cities and towns over 1,000, which were available July 1, 1950, with the comparison for 1940 and the percentage gain or loss.

These figures may vary slightly from the final count when checked, verified and tabulated in Washington, D. C. They will be used in rate determination until the final figures are available. From these the population as of July 1, 1949, was 585,115, and July 1, 1948, was 582,341. These population figures are used in determining the rates used in this biennial report.

TABLE I

1950 Preliminary Population Figures for Montana Counties, Cities and Towns of over 1,000 which were available July 1, 1950.

Also shown are the 1940 population figures for these areas and percentage, gain or loss since 1940.

CAUTION: It is to be noted that the 1950 preliminary figures as shown are subject to revision when final tabulations are completed by the central office in Washington, D. C.

	Population			%		%
	1950	1940	Gain	Gain	Loss	Loss
BEAVERHEAD	6,417	6,943			526	7.6
Dillon	3,079	3,014	65	2.2		
BIG HORN	9,799	10,419			620	6.0
Hardin	2,264	1,886	378	20.0		
BLAINE	8,473	9,566			1,093	11.4
Chinook	2,270	2,051	219	10.7		
BROADWATER	2,887	3,451			564	16.3
Townsend	1,316	1,309	7	0.5		
CARBON	10,106	11,865			1,759	14.8
Red Lodge	2,715	2,950			235	8.0
CARTER	2,785	3,280			495	15.1
CASCADE	52,408	41,999	10,409	24.8		
Great Falls	39,001	29,928	9,073	30.3		
CHOUTEAU	6,908	7,316			408	5.6
Fort Benton	1,508	1,227	281	22.9		
CUSTER	12,619	10,422	2,197	21.1		
Miles City	9,180	7,313	1,867	25.5		
DANIELS	3,928	4,563			635	13.9
Scobey	1,622	1,311	311	23.7		
DAWSON	9,038	8,618	420	4.9		
Glendive	5,235	4,524	711	15.7		
DEER LODGE	16,529	13,627	2,902	21.3		
Anaconda	11,221	11,004	217	2.0		
FALLON	3,647	3,719			72	1.9
Baker	1,759	1,304	455	34.9		
FERGUS	13,963	14,040			77	0.5
Lewistown	6,540	5,874	666	11.3		

TABLE I (Continued)

	Population					
	1950	1940	Gain	% Gain	Loss	% Loss
FLATHEAD	31,412	24,271	7,141	29.4		
Kalispell	9,694	8,245	1,449	17.6		
Whitefish	3,250	2,602	648	24.9		
Columbia Falls	1,237	637	600	94.2		
GALLATIN	21,718	18,269	3,449	18.9		
Bozeman	11,252	8,665	2,587	29.9		
Three Forks	1,106	876	230	26.3		
GARFIELD	2,154	2,641			487	18.4
GLACIER	9,636	9,034	602	6.7		
Cut Bank	3,719	2,509	1,210	48.2		
Browning	1,674	1,825			151	8.3
GOLDEN VALLEY	1,337	1,607			270	16.8
GRANITE	2,765	3,401			636	18.7
HILL	14,281	13,304	977	7.3		
Havre	8,094	6,427	1,667	25.9		
JEFFERSON	4,005	4,664			659	14.1
Whitehall	1,553	818	735	89.9		
JUDITH BASIN	3,204	3,655			451	12.3
LAKE	13,767	13,490	277	2.1		
Polson	2,217	2,156	61	2.8		
LEWIS AND CLARK	24,418	22,131	2,287	10.3		
Helena	17,498	15,056	2,442	16.2		
LIBERTY	2,168	2,209			41	1.9
LINCOLN	8,672	7,882	790	10.0		
Libby	2,401	1,837	564	30.7		
McCONE	3,246	3,798			552	14.5
MADISON	5,906	7,294			1,388	19.0
MEAGHER	2,039	2,237			198	8.9
White Sulph. Spgs.	1,015	858	157	18.3		
MINERAL	2,062	2,135			73	3.4
MISSOULA	34,982	29,038	5,944	20.5		
Missoula	22,320	18,449	3,871	21.0		
MUSSELSHELL	5,392	5,717			325	5.7
Roundup	2,852	2,644	208	7.9		
PARK	11,974	11,566	408	3.5		
Livingston	7,667	6,642	1,025	15.4		
PETROLEUM	1,025	1,083			58	5.3
PHILLIPS	6,348	7,892			1,544	19.6
Malta	2,085	2,215			130	5.9
PONDERA	6,429	6,716			287	4.3
Conrad	1,854	1,471	383	26.0		
POWDER RIVER	2,680	3,159			479	15.2
POWELL	6,258	6,152	106	1.7		
Deer Lodge	3,164	3,278			114	3.5
PRAIRIE	2,361	2,410			49	2.0
Terry	1,179	1,012	167	16.5		
RAVALLI	13,021	12,978	43	0.3		
Hamilton	2,668	2,332	336	14.4		

TABLE I (Continued)

	Population 1950	Population 1940	Gain	% Gain	Loss	% Loss
RICHLAND	10,343	10,209	134	1.3		
Sidney	3,975	2,978	997	33.5		
ROOSEVELT	9,527	9,806			279	2.8
Wolf Point	2,547	1,960	587	29.9		
Poplar	1,145	1,442			297	20.6
ROSEBUD	6,529	6,477	52	0.8		
Forsyth	1,884	1,696	188	11.1		
SANDERS	6,926	6,926			0	.0
SHERIDAN	6,623	7,814			1,191	15.2
Plentywood	1,851	1,574	277	17.6		
SILVER BOW	47,992	53,207			5,215	9.8
Butte	32,904	37,081			4,177	11.3
Walkerville	1,629	1,880			251	13.4
STILLWATER	5,345	5,694			349	6.1
Columbus	1,090	962	128	13.3		
SWEET GRASS	3,620	3,719			99	2.7
Big Timber	1,677	1,533	144	9.4		
TETON	7,130	6,922	208	3.0		
Choteau	1,613	1,181	432	36.6		
TOOLE	6,859	6,769	90	1.3		
Shelby	3,056	2,538	518	20.4		
TREASURE	1,406	1,499			93	6.2
VALLEY	11,320	15,181			3,861	25.4
Glasgow	3,810	3,799	11	0.3		
WHEATLAND	3,162	3,286			124	3.8
Harlowton	1,718	1,547	171	11.1		
WIBAUX	1,904	2,161			257	11.9
YELLOWSTONE	55,743	41,182	14,561	35.4		
Billings	31,724	23,261	8,463	36.4		
Laurel	3,647	2,754	893	32.4		
STATE TOTAL	587,196	559,456	27,740	5.0%		

THE FIELD

There are 76 local registrars of births and deaths, one in each county seat, usually the Health Officer, and where necessary for convenience and to prevent undue delay in filing records, there are additional local registrars at strategic points for other centers within a county. The local registrars are appointed by the State Registrar with approval of the Board of Health. The attendant at birth must report the birth to the local registrar within 10 days after the birth occurs.

The mortician who handles the body must present a completed death certificate to the local registrar and receive a burial or removal permit before a body may be in any way disposed. The local registrar must send all original birth, death and stillbirth certificates to the State Board of Health by the tenth of each month for the preceding month, and a duplicate record must be filed with the Clerk and Recorder of the county in which the event occurred.

Clerks of the 56 District Courts must report, on standard forms furnished by the State Registrar, all marriage licenses returned to him by marriage officiants and the divorces, annulments, and adoptions granted in his court by the 15th of the following month.

The Director made two field trips during the biennium. The first, April 1949, through the central and southern portion of the State, where local registrars, physicians, morticians and court clerks were contacted in the interest of better vital statistic registration. A second field trip in October 1949 was made in conjunction with the National Office of Vital Statistics in checking the birth and death reporting on seven Indian Reservations in the State. Local registrars, physicians, morticians and court clerks were also contacted in those counties between reservations.

Mr. Paul Fickenger and Dr. H. V. Hargett of the District Indian Office in Billings cooperated in this project. The results from this trip to the Indian reservations have been most gratifying in promptness and accuracy of reporting since then.

The State Registrar attended two meetings of Region VI (Rocky Mountain States), of which he was chairman for the two years, May 1948 to May 1950. The first meeting was held at Denver, Colorado, in October 1948, in conjunction with a coding school on revision of the International Causes of Death. The second meeting was held at Santa Fe, New Mexico, in September 1949. He attended two Work Conferences in Washington, D. C., where he sat on the Council as representative of Region VI. Miss Lilly Mattson, Senior Clerk, attended a coding school in Berkeley, California, in October 1949.

BIRTH NOTIFICATIONS

Notifications of births are sent to the parents of all babies born in the State. This is the first operation each month after the births are indexed. Parents should receive this notification within six weeks after the birth occurs. It states if there are corrections or errors to advise the State Registrar. All records for the biennium are permanently indexed and year 1912 has been re-indexed and brought up to date for entry of delayed births.

Substitute birth certificates for adoptions were made 459 times in 1948 and 421 times in 1949. A substitute birth certificate is made when a child is adopted. The statistical particulars of the foster parents are substituted for those of the natural parents. The original certificate is withdrawn and placed in a secret file, to be opened only by the individual after his 21st birthday or by court order. The new record replaces the original in the file.

INTERNATIONAL CAUSES OF DEATH AND CODES

The causes of death for the years 1939 through 1948 were coded according to the Sixth Revision. The Sixth Revision is much more detailed than the Fifth and it allows for morbidity coding as well as mortality.

RESEARCH

The research requests continued about the same, with requests, corrections, information and verifications amounting to over 1,000 per month. For 1948 there were 12,938 and for 1949 there were 12,599. No fees are charged Federal and State agencies for verification of births. By statute, free certified copies of records are issued to the Veterans Administration or its representatives. A fee of 50c per hour is charged for searching the files.

Certified copies were issued as follows:

	1948	1949
Paid Birth Certificates	3,150	3,116
Free Birth Certificates	1,100	878
Paid Death Certificates	277	282
Free Death Certificates	145	134
Total Certified Copies	4,672	4,410
Money Deposited to General Fund	$3,497.00	$3,365.50

BIRTH NUMBER

Since January 1, 1949, all babies born in the State have been assigned a birth number. This is their index number which will follow them through life. Forty-five states in the United States now assign birth numbers. The birth number is an eleven digit number; i.e., 000-00-000000. Illustrating with the number assigned the first baby born in Helena in 1950, the number is as follows: 125-50-250001. The first digit (left) is the United States, second and third digits designate Montana (the 25th state in alphatbetical order of states, including the District of Columbia), 50 is the year, 25 in the last six digits represents Lewis and Clark County (25th in alphabetical order of counties), the last four digits are assigned to the birth certificate in chronological order of births as received at the State Health Office. At the beginning of next year, the middle digits will change from 50 to 51, the year, and the final digit (right) will drop back to 1.

REPORTS TO OTHER AGENCIES

Reports at regular intervals to other departments or agencies are: Births, deaths, stillbirths, marriages, divorces and annulments to National Office of Vital Statistics. All deaths over 21 years of age to State Board of Equalization (Inheritance Tax). All deaths over 65 years to State Public Welfare Department (Old Age Pension). Tuberculosis deaths to Tuberculosis Control Division and to the Montana Tuberculosis Association. Cancer deaths to the Epidemiologist and the Montana Branch of the American Cancer Society. All automobile accident deaths are checked with the State Highway Patrol. All other accidents are queried, then, together with the traffic deaths, are sent to the National Office of Vital Statistics and to the National Safety Council and State Industrial Accident Board. All communicable disease deaths are reported to Epidemiology; the infant deaths (under one year), the maternal deaths and the stillbirths to the Maternal and Child Health Division; silicosis deaths to Industrial Hygiene; adoptions to Child Welfare, Division of Public Welfare; physical defects reported on births to Crippled Children's Division; total deaths to

National Funeral Directors' Association. Special studies are made on request for various agencies.

PRINCIPAL CAUSES OF DEATH 1948-49 COMPARED TO 1910

1948

Order	Cause	Number	Rate
1	Heart	1,793	307.9
2	Cancer	714	122.6
3	Accidents	591	104.5
4	Apoplexy	589	101.1
5	Early Infancy	320	55.0
6	Nephritis	250	42.9
7	Pneumonia	178	30.5
8	Tuberculosis	131	22.5
9	Diabetes	120	20.6
10	Arteriosclerosis	99	17.0

1949

Order	Cause	Number	Rate
1	Heart	1,998	341.5
2	Cancer	735	125.6
3	Apoplexy	591	101.6
4	Accidents	557	95.2
5	Early Infancy	346	59.1
6	Pneumonia	142	24.3
7	Arteriosclerosis	141	24.1
8	Nephritis	129	22.0
9	Tuberculosis	122	19.1
10	Diabetes	105	17.9

1910

Order	Cause	Number	Rate
1	Accidents	514	135.9
2	Tuberculosis	340	89.9
3	Pneumonia	282	74.6
4	Heart	257	67.9
5	Early Infancy	247	65.7
6	Diarrhea and Enteritis	226	60.1
7	Nephritis	222	58.7
8	Cancer	157	41.5
9	Typhoid	151	39.9
10	Apoplexy	112	29.6

The ten leading causes of death in Montana for 1948 and 1949 were the same but their place of importance varies in the two years, due in part to the different coding systems used in the two years. The deaths for 1948 were coded under the Fifth Revision of the International Codes, while 1949 deaths were coded under the Sixth Revision, which will be in use throughout the 1950 decade. The 1910 figures are placed here for comparison of the forces of mortality during a 40-year interval. Heart disease is the greatest cause of death at the present time. They now account for slightly over every third death. Cancer is second, (every eighth death). Accidents and apoplexy change from third to fourth, early infancy (including congenital malformations and death peculiar to early infancy), remains the fifth cause of death today, as they did four decades ago. Nephritis dropped from sixth to eighth in 1949; arteriosclerosis moved up from 10th to seventh place; tuberculosis dropped from eighth to ninth and diabetes from ninth to 10th. These ten greatest causes accounted for 4,856 of the 5,883 deaths in 1949, 82.5%, or over four out of five.

Compared to 1910, diarrhea and enteritis under two years is out of the picture. It caused 22 deaths in 1949, while only one death from typhoid was reported. Accidents were first and now fourth, and the rate is down 30%. Tuberculosis has dropped from second to ninth place, and the rate reduced by 80%. Pneumonia from third to sixth place, and there is a two-thirds reduction in the rate. Heart disease has jumped from fourth to first place. Nephritis dropped from seventh to eighth. Cancer is up from eighth to second and apoplexy from 10th to third place. Arteriosclerosis is now seventh and diabetes 10th. These causes did not show in the ten leading causes forty years ago.

TABLE II

Resident Births, Deaths, Infant Deaths, Stillbirths, Marriages and Divorces With the Rates by Counties, 1948

COUNTIES AND CITIES	RESIDENT Births	Rate	RESIDENT Deaths	Rate	INFANT DEATHS No.	Rate	MARRIAGES No.	Rate	DIVORCES No.	Rate	STILL-BIRTHS No.	Rate
Beaverhead	130	20.3	103	16.1	5	38.5	82	12.8	30	4.7	1	7.7
Big Horn	314	32.0	96	9.8	16	51.0	116	11.3	36	3.7	6	19.1
Blaine	263	31.0	76	9.0	8	30.4	78	9.2	14	1.7	3	11.4
Broadwater	60	20.8	36	12.5	2	33.3	36	12.5	50	17.3	0	0
Carbon	253	25.0	120	11.9	14	55.3	127	12.6	23	2.3	4	15.8
Carter	79	28.3	22	7.9	1	12.7	10	3.6	7	2.5	2	25.3
Cascade	1,333	25.4	519	9.9	30	22.5	634	12.1	218	4.2	14	10.5
Chouteau	177	25.6	57	8.3	1	5.6	109	15.8	9	1.3	2	11.3
Custer	321	25.4	116	9.2	7	21.8	291	23.1	46	3.6	3	9.3
Daniels	113	28.7	36	9.2	5	44.2	45	14.3	4	1.0	0	0
Dawson	298	33.0	75	8.3	9	30.2	114	12.6	23	2.5	3	10.1
Deer Lodge	380	23.0	168	10.2	12	31.6	133	8.0	51	3.1	7	18.4
Fallon	75	20.6	28	7.7	1	13.3	58	15.9	7	1.9	1	13.3
Fergus	329	23.6	165	11.8	11	33.4	151	10.8	47	3.4	3	9.1
Flathead	740	23.6	298	9.5	20	27.0	288	9.2	93	3.0	8	10.8
Gallatin	620	28.5	172	7.9	12	19.4	233	10.7	43	2.0	7	11.3
Garfield	71	33.0	20	9.3	0	0	4	1.9	0	0	0	0
Glacier	322	33.4	112	11.6	15	46.6	73	7.5	36	3.7	11	34.2
Golden Valley	27	20.2	11	8.2	0	0	9	6.7	1	0.7	1	37.0
Granite	60	21.7	32	11.6	2	33.3	17	6.1	8	2.9	2	33.3
Hill	406	28.4	133	9.3	19	46.8	154	10.8	37	2.6	11	27.1
Jefferson	76	19.0	45	11.2	2	26.3	46	11.5	4	1.0	1	13.2
Judith Basin	61	19.0	33	10.3	1	16.4	20	6.2	21	6.6	1	16.4
Lake	370	26.9	144	10.5	14	37.8	101	7.3	56	4.1	1	2.7
Lewis and Clark	578	23.7	263	10.8	14	24.2	345	14.1	176	7.2	11	19.0
Liberty	56	25.8	16	7.4	2	35.7	8	3.7	2	0.9	1	17.9
Lincoln	220	25.4	72	8.3	5	22.7	72	8.3	13	1.5	2	9.1
McCone	92	28.4	31	9.6	3	32.6	19	5.9	0	0	2	21.7

TABLE 11 (Continued)

COUNTIES AND CITIES	RESIDENT Births	RESIDENT Rate	RESIDENT Deaths	RESIDENT Rate	INFANT DEATHS No.	INFANT DEATHS Rate	MARRIAGES No.	MARRIAGES Rate	DIVORCES No.	DIVORCES Rate	STILL-BIRTHS No.	STILL-BIRTHS Rate
Madison	103	17.4	60	10.2	4	38.8	26	4.4	16	2.7	2	19.4
Meagher	45	22.1	26	12.8	2	44.4	14	6.9	7	3.4	1	22.2
Mineral	45	21.8	22	10.7	0	0	153	7.4	10	4.8	1	22.2
Missoula	875	25.0	313	8.9	28	32.0	614	17.6	153	4.4	5	5.7
Musselshell	115	21.3	59	11.1	2	17.4	76	12.8	16	3.0	4	34.8
Park	254	21.2	119	9.9	5	19.7	142	11.9	35	2.9	6	23.6
Petroleum	34	33.2	9	8.8	0	0	5	4.9	1	1.0	0	0
Phillips	179	28.2	61	9.6	5	27.9	62	9.8	20	3.2	1	5.6
Pondera	187	29.1	41	6.4	3	16.0	64	10.0	42	6.5	4	21.4
Powder River	66	24.6	22	8.2	2	30.3	18	6.7	0	0	0	0
Powell	136	21.7	78	12.5	3	22.1	63	10.1	16	2.6	3	22.1
Prairie	69	29.2	16	6.8	1	14.5	17	7.2	0	0	1	14.5
Ravalli	308	23.7	130	10.0	9	29.2	106	8.1	48	3.7	4	13.0
Richland	312	30.2	75	7.3	8	25.6	120	11.6	17	1.6	7	22.4
Roosevelt	339	35.6	107	11.2	9	26.5	105	11.0	46	4.9	12	35.4
Rosebud	193	29.6	64	9.8	5	25.9	54	8.3	19	2.9	2	10.4
Sanders	159	23.0	81	11.7	6	37.7	67	9.7	27	3.9	2	12.6
Sheridan	191	28.8	60	9.1	4	20.9	88	13.3	15	2.3	2	10.5
Silver Bow	1,022	21.3	711	14.8	38	37.2	607	12.6	239	5.0	34	33.3
Stillwater	128	23.9	44	8.2	2	15.6	85	15.9	11	2.1	2	15.6
Sweet Grass	71	19.6	53	14.6	2	28.2	35	9.7	5	1.4	0	0
Teton	177	24.8	48	6.7	2	11.3	71	10.0	6	0.8	1	5.6
Toole	179	26.1	62	9.0	6	33.5	90	13.1	25	3.6	1	5.6
Treasure	38	27.0	10	7.1	0	0	5	3.6	0	0	1	26.3
Valley	321	28.4	108	9.5	14	43.6	124	11.0	28	2.5	6	18.7
Wheatland	67	21.2	32	10.1	6	89.6	27	8.5	4	1.3	2	29.9
Wibaux	59	31.0	15	7.9	0	0	50	26.6	0	0	0	0
Yellowstone	1,496	26.8	448	8.0	60	40.1	870	15.6	229	4.1	16	10.7
Totals	14,992	25.7	5,873	10.1	457	30.5	7,131	12.2	2,090	3.6	228	15.2

TABLE III

Resident Births, Deaths, Infant Deaths, Stillbirths, Marriages and Divorces With the Rates by Counties, 1949

COUNTIES AND CITIES	RESIDENT		RESIDENT		INFANT DEATHS		MARRIAGES		DIVORCES		STILL BIRTHS	
	Births	Rate	Deaths	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rat
Beaverhead	169	26.3	101	15.7	6	35.5	63	9.8	22	3.4	2	11.8
Big Horn	315	32.1	87	8.9	10	31.7	100	10.2	31	3.2	4	12.7
Blaine	251	29.6	85	10.0	8	31.9	45	5.3	10	1.2	3	12.0
Broadwater	66	22.9	32	11.1	4	60.6	30	10.4	40	13.9	2	30.3
Carbon	205	20.3	106	10.5	3	14.6	115	11.4	30	3.0	2	9.8
Carter	64	22.9	22	7.9	2	31.3	12	4.3	4	1.4	2	31.3
Cascade	1,474	28.1	536	10.2	50	33.9	716	13.7	176	3.4	25	17.0
Chouteau	178	25.8	54	7.8	2	11.2	119	17.2	7	1.0	1	5.6
Custer	337	26.7	117	9.3	8	23.7	313	24.8	68	5.4	4	11.9
Daniels	85	21.6	28	7.1	2	23.5	41	10.4	5	1.3	2	23.5
Dawson	259	28.7	75	8.3	4	15.4	102	11.3	12	1.3	6	23.2
Deer Lodge	354	21.4	177	10.7	14	39.5	106	6.4	50	3.0	5	14.1
Fallon	116	31.8	34	9.3	1	8.6	39	10.7	5	1.4	1	8.6
Fergus	395	28.3	151	10.8	10	25.3	138	9.9	50	3.6	4	10.1
Flathead	808	25.7	268	8.5	27	33.4	310	9.9	104	3.3	15	18.6
Gallatin	582	26.8	204	9.4	13	22.3	197	9.1	59	2.7	12	20.6
Garfield	49	22.7	14	6.5	3	61.2	7	3.2	0	0	0	0
Glacier	305	31.7	75	7.8	9	29.5	68	7.1	38	3.9	4	13.1
Golden Valley	28	20.9	14	10.5	1	35.7	8	6.0	0	0	0	0
Granite	53	19.2	29	10.5	0	0	14	5.1	5	1.8	0	0
Hill	453	31.7	137	9.6	18	39.7	183	12.8	47	3.3	4	8.8
Jefferson	67	16.7	39	9.7	1	14.9	62	15.5	3	0.7	1	14.9
Judith Basin	74	23.1	37	11.5	1	27.0	18	5.6	22	6.9	1	13.5
Lake	352	25.6	139	10.1	15	42.6	102	7.4	45	3.3	6	17.0
Lewis and Clark	595	24.4	266	10.9	17	28.6	309	12.7	162	6.6	10	16.8
Liberty	53	24.4	11	5.1	4	75.5	9	4.2	0	0	2	37.7
Lincoln	203	23.4	95	11.0	1	4.9	57	6.6	13	1.5	1	4.9
McCone	108	33.3	29	8.9	2	18.5	13	4.0	1	0.3	1	9.3

TABLE III (Continued)

COUNTIES AND CITIES	RESIDENT		RESIDENT		INFANT DEATHS		MARRIAGES		DIVORCES		STILL-BIRTHS	
	Births	Rate	Deaths	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Madison	103	17.4	76	12.9	0	0	26	4.4	18	3.0	1	9.7
Meagher	49	24.0	26	12.8	0	0	10	4.9	4	2.0	3	61.2
Mineral	55	26.7	32	15.5	0	0	203	98.4	9	4.0	2	36.4
Missoula	910	26.0	304	8.7	14	15.4	571	16.3	141	4.0	8	8.8
Musselshell	147	27.3	51	9.5	2	13.6	55	10.2	17	3.2	2	13.6
Park	285	23.8	127	10.6	6	21.1	116	9.7	21	1.8	3	10.5
Petroleum	22	21.5	12	11.7	0	0	3	2.9	1	1.0	0	0
Phillips	174	27.4	68	10.7	3	17.2	52	8.2	20	3.2	2	11.5
Pondera	210	32.7	68	10.6	13	61.9	60	9.3	40	6.2	5	23.8
Powder River	66	24.6	21	7.6	2	30.3	25	9.3	1	0.4	1	15.2
Powell	142	22.7	71	11.3	5	35.2	61	9.7	14	2.2	6	42.3
Prairie	61	25.8	24	10.2	2	32.8	24	10.2	1	0.4	0	0
Ravalli	292	22.4	113	8.7	6	20.5	129	9.9	40	3.1	4	13.7
Richland	330	31.9	84	8.1	11	33.3	121	11.7	19	1.8	3	9.1
Roosevelt	347	36.4	110	11.5	10	28.8	122	12.8	38	4.0	9	25.9
Rosebud	211	32.3	61	9.3	12	56.9	59	9.0	32	4.9	3	14.2
Sanders	158	22.8	80	11.6	3	19.0	93	13.4	16	2.3	5	31.6
Sheridan	176	26.6	67	10.1	8	45.5	73	11.0	10	1.5	1	5.7
Silver Bow	1,082	22.5	698	14.5	38	35.1	622	13.0	209	4.4	20	18.5
Stillwater	130	24.3	61	11.4	4	30.8	76	14.2	8	1.5	1	7.7
Sweet Grass	60	16.6	28	7.7	0	0	30	8.3	6	2.0	1	16.7
Teton	176	24.7	56	7.9	2	11.4	69	9.7	12	1.7	3	17.0
Toole	175	25.5	54	7.9	6	34.3	57	8.3	29	4.2	1	5.7
Treasure	41	29.2	8	5.7	2	48.8	11	7.8	1	0.7	1	24.4
Valley	312	27.6	102	9.0	13	41.7	95	8.4	25	2.2	8	25.6
Wheatland	74	23.4	34	10.8	0	0	25	7.9	10	3.2	0	0
Wibaux	72	37.8	23	12.1	1	13.9	35	18.4	0	0	1	13.9
Yellowstone	1,501	26.9	462	8.3	58	38.6	862	15.5	244	4.4	17	11.3
Totals	15,359	26.3	5,883	10.1	458	29.8	6,981	11.9	1,995	3.4	231	15.0

TABLE IV. EVENTS AND RATES, MONTANA 1948-1949

Event	1948 Number	1948 Rate	1949 Number	1949 Rate
*Births	14,992	25.7	15,359	26.3
*Deaths	5,873	10.1	5,883	10.1
*Marriages	7,131	12.2	6,951	11.9
*Divorces	2,090	3.6	1,995	3.4
**Infant Deaths	457	30.5	458	29.8
**Maternal Deaths	13	0.9	16	1.0

* Per thousand population
** Per thousand live births
All others 100,000 population

International Classification of Deaths

Fifth Revision 1948

Code No.	Cause	Number	Rate
I.	TOTAL INFECTIOUS DISEASES	236	40.5
6.	Epidemic meningitis	2	0.3
9.	Whooping cough	6	1.0
10.	Diphtheria	3	0.5
	TUBERCULOSIS TOTAL	131	22.5
13.	T. B. pulmonary	119	20.4
14.	T. B. meninges	5	0.9
15.	T. B. abdominal	1	0.2
16.	T. B. spine	3	0.5
20.	T. B. genitourinary	2	0.3
22.	T. B. disseminated	1	0.2
24.	Septicemia	4	0.7
26.	Tularemia	1	0.2
27.	Dysentery	1	0.2

Abridged Sixth Revision 1949

Code No.	Cause	Number	Rate
I. INFECTIOUS DISEASES			
001-138	Total	201	34.4
	Tuberculosis, total	112	19.1
001-008	TB respiratory	97	16.6
010	TB meninges	7	1.2
010-019	TB other forms	8	1.4
020-029	Syphilis	41	7.0
030-035	Gonoc. infection	2	0.3
040-042	Typhoid fever	1	0.2
045-048	Dysentery	4	0.7
051	Strep. sore throat	3	0.5
052	Erysipelas	1	0.2
053	Septicemia	3	0.5
055	Diphtheria	3	0.5

TABLE IV (Continued)

1948 (Continued)

Code No.	Cause	Number	Rate
30.	Syphilis	40	6.9
32.	Infectious jaundice	2	0.3
33.	Influenza	14	2.4
35.	Measles	13	2.2
36.	Poliomyelitis	8	1.4
38.	Chicken pox	1	0.2
39.	Spotted fever	1	0.2
42.	Trichinosis	1	0.2
43.	Mycoses	1	0.2
44.	Hodgkin's disease	7	1.2
II.	CANCER AND OTHER TUMORS		
	CANCER TOTAL	714	122.6
45.	Cancer buccal cavity	20	3.4
46.	Cancer digestive tract	274	47.1
47.	Cancer respiratory system	78	13.4
48.	Cancer uterus	51	8.8
49.	Cancer other female genitals	32	5.5
50.	Cancer breast	57	9.8
51.	Cancer male genitals	62	10.6
52.	Cancer urinary male and female	34	5.8
53.	Cancer skin	15	2.6
54.	Cancer brain	7	1.2
55.	Cancer other organs	84	14.4
56.	Tumor non-malignant	4	0.7
57.	Tumors not specified	12	2.1
III.	GENERAL DISEASES		
58.	Rheumatism, acute	1	0.2
59.	Rheumatism, chronic	8	1.4
61.	Diabetes mellitus	120	20.6
62.	Pituitary diseases	1	0.2

1949 (Continued)

Code No.	Cause	Number	Rate
056	Whooping cough	2	0.3
057	Men. infection	2	0.3
080	Polio. acute	13	2.2
082	Infectious enceph.	8	1.4
085	Measles	3	0.5
049	Food poisoning	2	0.3
092	Hepatitis	1	0.2
II. NEOPLASMS			
140-239	Total	752	128.5
	Neoplasms (140-205)	735	125.6
140-148	Buccal cavity	13	2.2
150	Esophagus	12	2.1
151	Stomach	117	20.0
152-153	Intestine	59	10.1
154	Rectum	32	5.5
160-165	Respiratory	80	13.7
170	Breast	58	9.9
171-174	Uterus	36	6.2
177	Prostate	55	9.4
190-191	Skin	10	1.7
196-197	Bone and con.	7	1.2
155-199	Other malignant	197	33.7
204	Leukemia	37	6.3
200-203 205	Lymphatic	22	3.8
210-239	Benign neoplasm	17	2.9
III. ALLERGY, ENDO. AND METABOLIC			
240-289	Total	141	24.1
240-245	Allergic	18	3.1

TABLE IV (Continued)

1948 (Continued)

Code No.	Cause	Number	Rate
63.	Thyroid disease	9	1.5
64.	Thymus diseases	6	1.0
65.	Adrenal diseases	4	0.7
IV.	BLOOD AND BLOOD MAKING ORGAN DISEASES		
72.	Hemorrhagic condition	7	1.2
73.	Anemias	25	4.3
74.	Leukemias	3	0.5
V.	CHRONIC POISONS AND INTOXICATIONS		
77.	Alcoholism	15	2.6
VI.	NERVOUS SYSTEM		
80.	Encephalitis	5	0.9
81.	Meningitis (simple)	4	0.7
82.	Other diseases spinal cord	7	1.2
83.	Cerebral hemorrhage	589	101.1
84.	Dementia praecox	7	1.2
85.	Epilepsy	12	2.1
86.	Convulsions (-5 yrs.)	1	0.2
87.	Other nervous diseases	31	5.3
89.	Diseases of ears	5	0.9
VII.	CIRCULATORY SYSTEM		
	HEART TOTAL	1,793	307.9
90.	Pericarditis	2	0.3
91.	Endocarditis, acute	10	1.7
92.	Endocarditis, chronic	132	22.7
93.	Myocardium diseases	693	119.0
94.	Coronary arteries	717	123.1
95.	Other heart diseases	239	41.0
96.	Aneurysm	2	0.3

1949 (Continued)

Code No.	Cause	Number	Rate
250-252	Goitre and thyroid	5	0.9
260	Diabetes mellitus	105	17.9
270-277	Other endo. glands	9	1.5
	Others	4	0.7
IV.	BLOOD AND BLOOD FORMING ORGANS		
290-299	Total	15	2.6
290-293	Anemias	11	1.9
	Other blood forming	4	0.7
V.	MENTAL DISORDERS		
300-326	Total	49	8.4
300-309	Psychoses	31	5.3
310-326	Psychoneuroses	18	3.1
VI.	NERVOUS		
330-398	Total	647	110.6
330-334	Vascular lesions	591	101.5
340	Meningitis simple	4	0.7
345	Multiple sclerosis	7	1.2
353	Epilepsy	11	1.9
391-398	Diseases of ear	4	0.7
	Other nervous	30	5.1
VII.	CIRCULATORY		
400-468	Total	2,237	382.3
	Heart total	1,998	341.5
400-402	Rheumatic fever	17	2.9
410-416	Rheumatic heart	112	19.1
420-422	Degenerative heart	1,489	254.5
430-434	Other heart	186	31.8
440-443	Hypert. heart	197	33.7

TABLE IV (Continued)

1948 (Continued)

Code No.	Cause	Number	Rate
97.	Arteriosclerosis	99	17.0
98.	Gangrene	2	0.3
99.	Other artery diseases	21	3.6
100.	Vein diseases	14	2.4
102.	Blood pressure	10	1.7
103.	Other circulatory	4	0.7
VIII.	RESPIRATORY SYSTEM		
105.	Diseases larynx	1	0.2
106.	Bronchitis	12	2.1
	Pneumonia, all forms, total	178	30.5
107.	Bronchopneumonia	91	30.5
108.	Lobar pneumonia	51	8.8
109.	Unspecified pneumonia	36	6.2
110.	Pleurisy	3	0.5
111.	Congestion lungs	19	3.3
112.	Asthma	11	1.9
113.	Pulmonary emphysema	7	1.2
114.	Other respiratory	18	3.1
IX.	DIGESTIVE SYSTEM		
115.	Diseases buccal cavity	10	1.7
116.	Diseases esophagus	3	0.5
117.	Ulcer stomach	41	7.0
118.	Other stomach	8	1.4
119.	Diarrhea and enteritis (−2 yr.)	25	4.3
120.	Diarrhea and enteritis (+2 yr.)	5	0.9
121.	Appendicitis	26	4.5
122.	Intestinal obstruction	48	8.2
123.	Other intestinal	9	1.5
124.	Cirrhosis liver	42	7.2
125.	Other liver	11	1.9

1949 (Continued)

Code No.	Cause	Number	Rate
444-447	Hypert. without heart	53	9.1
450-456	Arteries	160	27.3
460-468	Other circulatory	23	3.9
VIII.	RESPIRATORY		
470-527	Total	225	38.5
470-475	Upper respiratory	7	1.2
480-483	Influenza	12	2.1
	Pneumonia, total	142	24.2
490	Lobar pneumonia	41	7.0
491	Bronchopneumonia	62	10.6
492, 493	Other pneumonia	39	6.7
500-502	Bronchitis	2	0.3
510-527	Other respiratory	62	10.6
IX.	DIGESTIVE		
530-587	Total	240	41.0
530-539	Buccal and esophagus	5	0.9
540-545	Ulcer stomach and duodenal	40	6.8
550-553	Appendicitis	23	3.9
560-570	Intestinal obst.	63	10.8
571, 572	Gastro-enteritis and colitis (4 wks.)	21	3.6
581	Cirrhosis liver	41	7.0
584, 585	Choletithasis and cystitis	32	5.5
	Other digestive	15	2.6
X.	GENITOURINARY		
590-637	Total	169	28.9
	Nephritis all forms	129	22.1
590	Nephritis acute	13	2.2
591-594	Chronic nephritis and nephrosis	116	19.8
600-604	Kidney infection and calculi	7	1.2

TABLE IV (Continued)

1948 (Continued)

Code No.	Cause	Number	Rate
126.	Biliary calculi	14	2.4
127.	Other gall bladder	23	3.9
128.	Diseases pancreas	6	1.0
129.	Peritonitis not specified	2	0.3
X.	GENITOURINARY SYSTEM		
	Nephritis, all forms, total	250	42.9
130.	Nephritis, acute	17	2.9
131.	Nephritis, chronic	219	37.6
132.	Nephritis, unspecified	14	2.4
133.	Other kidney	10	1.7
134.	Urinary calculi	2	0.3
135.	Diseases bladder	4	0.7
136.	Diseases urethra	1	0.2
137.	Diseases prostate	30	5.2
138.	Male genitals	6	1.0
XI.	PUERPERAL STATE		
	All puerperal, total	13	2.2
140.	Abortion septic	2	0.3
141.	Abortion aseptic	2	0.3
144.	Toxemias of pregnancy	2	0.3
146.	Hemorrhage of childbirth	3	0.5
147.	Infection during childbirth	1	0.2
148.	Puerperal toxemias	1	0.2
149.	Other accidents	2	0.3
XII.	SKIN AND CELLULAR		
153.	Other skin	7	1.2
XIII.	BONES AND LOCOMOTION		
154.	Ostemoyelitis	1	0.2
XIV.	CONGENITAL MALFORMATIONS		

1949 (Continued)

Code No.	Cause	Number	Rate
610	Hyper. prostate	26	4.4
	Other genitourinary	7	1.2
XI.	PUERPERAL		
640-689	Total	16	2.7
640,641 681,682 684	Sepsis of pregnancy	3	0.5
642,652 685,686 643,644	Toxemias—preg.	6	1.0
670-672	Hemorrhagic—preg.	3	0.5
	Other pregnancy	4	0.7
XII.	SKIN AND CELLULAR		
690-716	Total	5	0.9
690-698	Skin and sub. tissue	2	0.3
700-716	Other skin	3	0.5
XIII.	BONES AND MOVEMENT		
720-749	Total	14	2.4
720-725	Arthritis	14	2.4
XIV.	CONGENITAL MALFORMATIONS		
750-759	Total	84	14.4
750-759	Congenital mal.	84	14.4
XV.	EARLY INFANCY		
760-776	Total	262	44.8
760,761	Birth injuries	50	8.5
762	Atelectasis	47	8.0
763-768	Infection, newborn	8	1.4

TABLE IV (Continued)

1948 (Continued)

Code No.	Cause	Number	Rate
157.	Congenital malformations	60	10.3
XV.	EARLY INFANCY		
158.	Congenital debility	5	0.9
159.	Premature birth	158	27.1
160.	Injury at birth	62	10.6
161.	Peculiar to early infancy	35	6.0
XVI.	OLD AGE		
162.	Senility	109	18.7
XVII.	EXTERNAL VIOLENCE		
	Suicides, total		
163.	Suicides by poisoning	14	2.4
164.	Suicides other	75	12.9
	Homicides, total	18	3.1
166.	Homicides by firearms	10	1.7
167.	Homicides by cutting	1	0.2
168.	Homicides by other means	7	1.2
	Accidents, total	591	104.5
169.	Railway accidents	24	4.1
170.	Motor vehicles	173	29.7
171.	Other road transport	3	0.5
172.	Water transportation	14	2.4
173.	Air transportation	18	3.1
174.	Mines and quarries	18	3.1
175.	Agricultural and forest	35	6.0
176.	Other machinery	5	0.9
177.	Food poisoning	3	0.5
178.	Absorption of poisoning and gases	13	2.2
179.	Other solid or liquid poison	5	0.9
180.	Conflagration	26	4.5

1949 (Continued)

Code No.	Cause	Number	Rate
770	Hemolytic, newborn	17	2.9
769,771 772	Defined, newborn	13	2.2
773-776	Immaturity and other	127	21.7
XVI.	SENILITY AND ILL-DEFINED		
780-795	Total	156	26.7
794	Senility	49	8.4
780-793 795	Ill-defined and unknown	107	18.3
XVII.	EXTERNAL CAUSES		
800-899	All external, total	670	114.5
	Total accidents	557	95.2
800-802	Railway	19	3.2
810-835	Motor vehicle	158	27.0
850-858	Water transport	5	0.9
860-866	Aircraft	13	2.2
	Other transport	2	0.3
870-888	Liquid and solid poison	6	1.0
890-895	Gas poison	12	2.1
900-904	Falls	124	21.2
910	Blow	23	3.9
911	Vehicle	1	0.2
912	Machinery	18	3.1
914	Electricity	7	1.2
915	Explosion of pressure vessel	1	0.2
916	Fire and explosion	38	6.5
917,918	Hot substance	3	0.5
919	Firearms	17	2.9
921-923	Inhalation and ingestion	8	1.4

TABLE IV (Continued)

1948 (Continued)			
Code No. Cause		Number	Rate
181.	Other burns	16	2.7
182.	Mechanical suffocation	17	2.9
183.	Drowning	40	6.9
184.	Firearms	19	3.3
185.	Cutting and piercing	1	0.2
186.	By fall	126	21.6
188.	Injury by animals	3	0.5
190.	Excessive cold	9	1.5
191.	Excessive heat	1	0.2
192.	Lightning	2	0.3
193.	Electric shocks	2	0.3
194.	Venomous animals	1	0.2
195.	Other accidents	17	2.9
XVIII. ILL DEFINED			
199.	Sudden death	6	1.0
200.	Not specified	123	21.1

1949 (Continued)			
Code No.	Cause	Number	Rate
924	Suffocation in bed	18	3.1
925	Suffocation, other	5	0.9
928	Animals	5	0.9
929	Drowning	39	6.1
931	Excessive heat	3	0.5
932	Excessive cold	25	4.3
933	Hunger, thirst	3	0.5
934	Cataclysm	1	0.2
936	Other—unspecified	3	0.5
970-979	Suicides	91	15.6
980-985	Homicides	21	3.6
990-999	War injuries	1	0.2

TABLE V

Montana—1949—Causes of Death by Age Groups

Abridged 6th Revision International Causes of Death

CAUSES AND CODE NUMBERS	-1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75	Totals
Tuberculosis of respiratory system 001-008	2	3		1	7	4	7	6	3	1	4	7	9	18	11	8	6	97
Tuberculosis, other forms 010-019	3	4			1	1	1		2			1		1			1	15
Syphilis and its sequeles 020-029	2							1	1	3	2	5	5	6	6	1	9	41
Gonococcal infection and other venereal diseases 030-039					1			1										2
Infectious diseases commonly arising in intestinal tract 040-049	4					1								2	1			8
Other bacterial diseases 050-064	1	4	4	1			1			1						1	1	14
Diseases attributable to viruses 080-096	5	3	5	3		1	2	2	2			1	1					25
Malignant neoplasm of buccal cavity and pharynx 140-148						1						1	1	4	1	1	4	13
Malignant neoplasm of digestive organs and peritoneum 150-159		2		1	1		2		2	11	14	14	27	54	42	49	92	311
Malignant neoplasm of respirtary system 160-165									1	2	2	10	8	18	15	10	14	80
Malignant neoplasm of breast and genito-urinary organs 170-181		1				1	1	5	5	8	9	15	21	23	27	34	59	209
Malignant neoplasm of other and unspecified sites 190-199	2	3			1		1	1	2	2	3	2	4	11	9	4	17	62
Neoplasms of lymphatic and haematopitic tissues 200-205	1	6	2	1	2	2	1	3	1	4	3	2	5	3	9	7	7	59
Benign neoplasm 210-229								1			2	1	2				2	8
Neoplasm of unspecified nature 230-239			1					1	1	1			1	2	1	1		9
Allergic disorders 240-245					1	1		1				3	2	1	2	3	4	18
Diseases of thyroid gland 250-254								1	1						1	2	1	6
Diabetes mellitus 260		1	2	1	2		2	3	2	3	1	2	5	18	15	23	25	105
Diseases of other endocrine glands 270-277	7										1		1					9
Avitaminoses and other metabolic diseases 280-289	1											1					1	3
Diseases of blood and blood forming organs 290-299		1				1		1							3	5	4	15

TABLE V (Continued)

CAUSES AND CODE NUMBERS	1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75	Totals
Psychoses 300-309												1		3	2	4	21	31
Psychoneurotic disorders 310-318							1											1
Disorders of character-behavior and intelligence 320-326	1	1						1	1	3	2		2	1	3	2		17
Vascular lesions affecting central nervous system 330-334	1	1				1	1	3	3	3	10	16	33	60	80	111	267	590
Inflammatory diseases of central nervous system 340-345	4	4			1		1	2	2		1		1		1	2	1	20
Other diseases of central nervous system 350-357	1				2			1	2	1	1	3	3	1	5	2	9	31
Diseases of nerves and peripheral ganglia 360-369												1						1
Diseases of ear and mastoid process 390-398	3													1				4
Rheumatic fever 400-402					1	3	1	3				1	5		2		1	17
Chronic rheumatic heart disease 410-416	1				2			5	4	3	11	11	12	12	16	9	26	112
Arteriosclerosis heart disease including coronary disease 420						1	3	6	9	21	52	70	121	156	176	188	330	1,133
Chronic endocarditis not specified as rheumatic 421																		
Other myocardial degeneration 422	1	1							4	6	5	10	10	33	48	43	195	356
Other diseases of heart 430-434					1			3	6	6	4	12	17	16	21	24	76	186
Hypertensive disease 440-447									3	2	10	6	22	23	40	42	102	250
Diseases of arteries 450-456							1	1	1		4	2	4	5	14	16	112	160
Diseases of veins and other diseases of circulatory system 460-468							1		1	1	2	1	1	2	3	5	6	23
Acute upper respiratory infectious 470-475	3		2													2		7
Influenza 480-483	3						1				1		2	2	2	1	1	13
Pneumonia 490-493	29	6			2		2	4	4	4	5	7	7	6	10	19	37	142
Bronchitis 500-502	1															1		2
Other diseases of respiratory system 510-527	1		2						1	3	3	7	4	14	9	3	15	62
Diseases of buccal cavity and esophagus 530-539	2							1									2	5

TABLE V (Continued)

CAUSES AND CODE NUMBERS	1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75	Totals
Diseases of stomach and duedenum 540-545	1	1					1		1	3	3	4	4	3	6	6	7	40
Appendicits 550-553	1	2	1	4		1		3		1		1	1	3	2	3	1	24
Hernia of abdominal cavity 560-561	1								1	1		1	1		3	1	8	17
Other diseases of intestines and peritoneum 570-578	12	4	1	1			2		3	1	1	2	6	6	4	6	25	74
Diseases of liver, gallbladder 580-587	1						2	3	4	4	7	8	5	11	5	14	17	81
Nephritis and nephrosis 590-594	1	2	1	1	3	1	4	3	2	3	1	3	7	16	20	17	44	129
Other diseases of urinary system 600-609					1						2		2	1		1	2	9
Diseases of male genital organs 610-617												1		2	3	5	17	28
Diseases of breast, ovary, fallopian tube and parametrium 620-626										1								1
Diseases of uterus and other female genital organs 630-637														1		1		2
Complications of pregnancy 640-649						1	2	3		2								8
Delivery with specified complications 670-678					1		1	1										3
Complications of the puerperium 680-689						1	1	1	1	1								5
Infections of skeleton and subcutaneous tissue 690-698															1	1		2
Other diseases of skin and subcutaneous tissue 700-716														2		1		3
Arthritis and rheumatism except rheumatic fever 720-727											1	1	1	1	4	2	4	14
Congenital malformation 750-759	74	5	1			1	1			2								84
Birth injuries, asphyxia and infections of newborn 760-769	111																	111
Other diseases peculiar to early infancy 770-776	151																	151
Symptoms referable to systems or organs 780-789	2					1	1	2	2	1	3	7	6	8	10	6	13	62
Senility and ill-defined diseases 790-795	2	3	1		1				4			3	1	4	9	10	56	94
Railway accidents 800-802			2					2	1	1	2		3	5	1	1	1	19

TABLE V (Continued)

CAUSES AND CODE NUMBERS	1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75	Totals
Motor vehicle traffic accidents E 810-825	2	6	2	4	10	9	19	21	14	7	11	5	12	5	10	11	7	155
Motor vehicle non-traffic accidents 830-835		1					1							1	1			4
Other road vehicle accidents E 840-845								1									1	2
Water transport accidents ♯ 850-858						1			1		1					1	1	5
Aircraft accidents ♯ 860-866				1	2	4	1	1	2	1	1							13
Accidental poisoning by solid and liquid substances E 870-E 888		1						1		1			1			1	1	6
Accidental poisoning by gas and vapour E 890-895		1						3	2	1	1				1	2	1	12
Accidental falls E 900-904			1	1	2			2	3	3	6	3	6	7	9	9	70	122
Other accidents ♯ 910-936	21	19	17	16	12	16	11	9	12	8	10	13	11	10	10	7	16	218
Suicide and self-inflicted injury E 970-979				2		9	3	4	7	7	10	8	6	10	9	7	9	91
Homicide and injury purposely inflicted by other persons E 980-985	1	1	2	1		1	3	1	1	3	2		2	1		1	1	21
Injury resulting from operations of war ♯ 990-999										1								1
	460	87	47	39	57	64	83	118	125	142	214	273	411	593	683	737	1,750	5,883

TABLE VI

The population, births, deaths, infant and maternal deaths, communicable diseases and principal causes of death, with their rates by years 1910 - 1949

		DEATHS		BIRTHS		INFANT MORT.		MATERNAL MORT.		T. B.		SMALLPOX		TYPHOID		DIPH.	
Year	Population	No.	Rate	No.	Rate	Deaths	Rate	D	R	D	R	D	R	D	R	D	R
1910 ..	376,053	3,999	10.6	6,124	16.2	714	116.6	62	10.1	340	89.9	2	0.5	151	39.9	61	16.1
1911 ..	396,223	4,009	10.1	7,542	19.0	717	95.1	78	10.3	420	106.0	0	0.0	80	20.2	30	7.6
1912 ..	414,184	4,083	9.9	8,133	19.6	660	81.2	75	9.2	468	113.0	2	0.5	57	13.8	13	3.1
1913 ..	432,145	5,033	11.6	8,682	20.1	812	93.5	80	9.2	456	105.5	3	0.7	95	22.0	23	5.3
1914 ..	450,106	4,846	10.8	9,969	22.1	834	83.7	100	10.0	472	104.9	5	1.1	66	14.7	36	8.0
1915 ..	468,067	5,072	10.8	11,132	23.8	816	73.3	91	8.2	530	113.2	1	0.2	57	12.2	21	4.5
1916 ..	486,028	5,791	11.9	11,300	23.2	970	85.8	108	9.6	521	107.2	2	0.4	53	10.9	38	7.8
1917 ..	503,989	6,589	13.1	11,600	23.0	1,090	94.0	143	12.3	549	108.9	6	1.2	79	15.7	40	7.9
1918 ..	521,950	8,985	17.2	11,800	22.6	1,027	87.0	184	15.6	504	96.6	6	1.1	53	10.2	45	8.6
1919 ..	539,911	5,786	10.7	12,017	22.3	962	80.1	141	11.7	480	88.9	9	1.7	39	7.2	41	7.6
1920 ..	548,339	5,289	9.6	11,862	21.6	862	72.7	104	8.8	419	76.3	2	0.4	27	4.9	32	5.8
1921 ..	547,238	4,693	8.6	12,127	22.2	805	66.4	89	7.4	356	65.1	3	0.5	20	3.7	47	8.6
1922 ..	546,137	5,083	9.3	11,060	20.3	763	69.0	86	7.8	383	70.1	2	0.4	21	3.8	61	11.2
1923 ..	545,036	4,893	9.0	10,524	19.3	748	71.1	79	7.5	395	72.5	3	0.6	16	2.9	51	9.4
1924 ..	543,935	4,970	9.1	10,283	18.9	683	66.4	67	6.5	434	79.8	3	0.6	16	2.9	56	10.3
1925 ..	542,834	5,188	9.6	10,302	19.0	726	70.5	83	8.1	396	73.0	0	0.0	24	4.4	34	6.3
1926 ..	541,733	5,395	10.0	10,008	18.5	757	75.6	79	7.9	377	69.6	1	0.2	14	2.6	18	3.3
1927 ..	540,632	5,342	9.9	9,875	18.3	651	65.9	65	6.6	373	69.0	1	0.2	15	2.8	20	3.7
1928 ..	539,531	5,780	10.7	10,072	18.7	612	60.8	75	7.4	357	66.2	4	0.7	16	3.0	20	3.7
1929 ..	538,430	5,748	10.7	10,080	18.7	640	63.5	84	8.3	357	66.3	1	0.2	32	5.9	12	2.2
1930 ..	537,606	5,435	10.1	10,004	18.6	569	57.0	67	6.7	337	62.7	1	0.2	16	3.0	4	0.7
1931 ..	540,337	5,280	9.8	9,638	17.8	583	60.5	70	7.2	329	60.9	0	0.0	12	2.2	7	1.3
1932 ..	542,522	5,294	9.8	9,091	16.8	467	51.4	60	6.6	307	56.6	0	0.0	13	2.4	2	0.4
1933 ..	544,707	5,212	9.6	8,953	16.4	461	51.5	51	5.7	282	51.8	0	0.0	14	2.6	17	3.1
1934 ..	546,892	5,617	10.3	9,949	18.2	532	53.5	57	5.7	265	48.5	0	0.0	17	3.1	10	1.8
1935 ..	549,077	6,291	11.5	10,029	18.3	602	60.0	52	5.2	257	46.8	1	0.2	12	2.2	14	2.5
1936 ..	551,262	6,255	11.3	10,400	18.9	593	57.0	57	5.5	221	40.1	3	0.5	8	1.5	10	1.8
1937 ..	553,447	6,128	11.1	10,248	18.5	518	50.5	38	3.7	241	43.5	2	0.4	11	2.0	10	1.8
1938 ..	555,632	5,684	10.2	10,673	19.2	486	45.5	35	3.3	241	43.4	1	0.2	5	0.9	9	1.4

TABLE VI (Continued)

Year	Population	DEATHS		BIRTHS		INFANT MORT.		MATERNAL MORT.		T. B.		SMALLPOX		TYPHOID		DIPH.	
		No.	Rate	No.	Rate	Deaths	Rate	D	R	D	R	D	R	D	R	D	R
1939 ..	557,817	5,901	10.6	10,897	19.5	534	49.0	35	3.2	248	44.5	0	0.0	11	2.0	9	1.6
1940 ..	560,002	5,722	10.2	11,468	20.5	527	46.0	39	3.4	225	40.2	0	0.0	4	0.7	6	1.1
1941 ..	562,187	5,627	10.0	11,513	20.5	427	37.1	22	1.9	201	35.8	0	0.0	2	0.4	14	2.5
1942 ..	560,002	5,491	9.8	11,588	20.7	397	34.3	27	2.3	195	34.8	0	0.0	0	0.0	5	0.9
1943 ..	484,000	5,585	11.5	11,258	23.3	440	39.1	21	1.9	199	41.1	0	0.0	4	0.8	5	1.0
1944 ..	465,000	5,615	12.1	10,765	23.1	391	36.3	19	1.8	167	35.9	0	0.0	1	0.2	7	1.5
1945 ..	500,000	5,378	10.8	10,403	20.8	357	34.3	15	1.4	166	33.2	0	0.0	2	0.4	4	0.8
1946 ..	500,000	5,544	11.1	12,661	25.3	440	34.8	16	1.3	151	30.2	0	0.0	2	0.4	5	1.0
1947 ..	500,000	5,687	11.4	14,770	29.5	477	32.3	13	0.9	135	27.0	0	0.0	1	0.2	2	0.4
1948 ..	582,341	5,873	10.1	14,992	25.6	457	30.5	13	0.9	131	22.5	0	0.0	0	0.0	3	0.5
1949 ..	585,115	5,883	10.1	15,359	26.3	458	29.8	16	1.0	112	19.1	0	0.0	1	0.2	3	0.5

Year	SCARLET		MEASLES		W. C.		INFLU.		M'GITIS		POLIO		AUTOS		CANCER		HEART	
	D	R	D	R	D	R	D	R	D	R	D	R	D	R	D	R	D	R
1910	61	16.1	16	4.2	41	10.8	24	6.3	1	0.3	17	4.5	5	1.3	157	41.5	257	67.9
1911	37	9.3	49	12.4	27	6.8	15	3.8	3	0.8	5	1.3	3	0.8	157	39.6	317	80.0
1912	26	6.3	6	1.4	56	13.5	17	4.1	0	0.0	11	2.7	3	0.7	164	39.6	305	73.6
1913	119	27.5	54	12.5	46	10.6	30	6.9	15	3.5	8	1.9	15	3.5	207	47.9	381	88.2
1914	33	7.3	27	6.0	18	4.0	22	4.9	10	2.2	4	0.9	26	5.8	223	49.5	387	86.0
1915	16	3.4	7	1.5	36	7.7	41	8.8	7	1.5	1	0.2	31	6.6	223	47.6	407	87.0
1916	19	3.9	36	7.4	79	16.3	58	11.9	20	4.1	24	4.9	42	8.6	247	50.8	469	96.5
1917	85	16.9	46	1.9	43	8.5	43	8.5	6	1.2	8	1.6	59	11.7	278	55.2	477	94.6
1918	71	13.6	18	3.4	64	12.3	2,654	508.5	16	3.1	7	1.3	64	12.3	279	53.5	476	91.2
1919	57	10.6	16	3.0	13	2.4	687	127.2	15	2.8	3	0.6	44	8.1	302	55.9	448	83.0
1920	22	4.0	27	4.9	51	9.3	304	55.4	15	2.7	5	0.9	45	8.2	282	51.4	428	78.0
1921	10	1.8	35	6.4	69	12.6	49	9.0	7	1.3	2	0.4	48	8.8	315	57.6	523	95.6
1922	19	3.5	0	0.0	8	1.5	239	43.8	8	1.5	7	1.3	48	8.8	343	62.8	595	108.9
1923	17	3.1	19	3.5	23	4.2	158	29.0	7	1.3	6	1.1	49	9.0	333	61.1	575	105.5
1924	32	5.9	73	13.4	26	4.8	64	11.8	5	0.9	23	4.2	70	12.9	363	66.7	645	118.6

TABLE VI (Continued)

Year	SCARLET		MEASLES		W. C.		INFLU.		M'GITIS		POLIO		AUTOS		CANCER		HEART	
	D	R	D	R	D	R	D	R	D	R	D	R	D	R	D	R	D	R
1925	21	3.9	5	0.9	63	11.6	109	20.1	5	0.9	6	1.1	98	18.1	379	69.8	672	123.8
1926	25	4.6	21	3.9	45	8.3	241	44.5	20	3.7	5	0.9	101	18.6	401	74.0	695	128.3
1927	32	5.9	30	5.5	15	2.8	147	27.2	66	12.2	4	0.7	77	14.2	414	76.6	815	150.8
1928	10	1.9	8	1.5	49	9.1	366	67.8	65	12.0	10	1.9	139	25.8	449	83.2	864	160.1
1929	16	3.0	46	8.5	21	3.9	212	39.4	60	11.1	0	0.0	126	23.4	467	86.7	809	150.3
1930	15	2.8	12	2.2	16	3.0	102	19.0	22	4.1	6	1.1	106	19.7	424	78.9	759	141.2
1931	11	2.3	3	0.5	46	8.5	152	28.1	13	2.4	15	2.8	127	23.5	420	77.7	915	169.3
1932	7	1.3	12	2.2	22	4.1	190	25.0	5	0.9	4	0.7	98	18.1	513	94.6	1,065	196.3
1933	12	2.2	15	2.8	15	2.8	173	31.7	3	0.6	2	0.4	119	21.8	508	93.3	1,087	199.6
1934	11	2.0	30	5.5	24	4.4	122	22.3	7	1.3	14	2.6	209	38.2	477	87.2	1,117	204.2
1935	22	4.0	49	8.9	22	4.0	173	31.5	15	2.7	1	0.2	161	29.3	528	96.2	1,299	236.6
1936	44	8.0	3	0.5	16	2.9	101	18.3	23	4.2	5	0.9	174	31.6	567	102.9	1,248	226.4
1937	12	2.2	2	0.4	14	2.5	244	44.1	7	1.3	6	1.1	177	32.0	566	102.3	1,395	252.1
1938	9	1.6	12	2.2	47	8.5	81	14.6	9	1.6	3	0.5	143	25.7	557	100.2	1,308	235.4
1939	8	1.4	16	2.9	16	2.9	99	17.7	4	0.7	1	0.2	149	26.7	643	115.3	1,486	266.4
1940	9	1.6	5	0.9	5	0.9	77	13.7	7	1.2	8	1.4	153	27.3	618	110.4	1,349	240.9
1941	8	1.4	1	0.2	6	1.1	91	16.2	4	0.7	10	1.8	197	35.0	631	112.2	1,371	243.9
1942	3	0.5	0	0.0	12	2.1	31	5.5	7	1.2	0	0.0	109	19.5	644	115.0	1,466	261.8
1943	3	0.6	8	1.7	18	3.7	67	13.8	6	1.2	5	1.0	100	20.7	604	124.8	1,522	314.5
1944	1	0.2	14	3.0	9	1.9	53	11.4	3	0.6	6	1.3	109	23.4	665	143.0	1,687	362.9
1945	1	0.2	1	0.2	3	0.6	49	9.4	2	0.4	10	2.0	121	24.2	640	128.0	1,606	321.2
1946	0	0.0	3	0.6	3	0.6	26	5.2	2	0.4	7	1.4	172	34.4	637	127.4	1.636	327.2
1947	0	0.0	13	2.6	5	1.0	36	7.2	2	0.4	3	0.6	169	33.8	683	136.6	1,722	344.4
1948	0	0.0	13	2.2	6	1.0	14	2.4	2	0.3	8	1.4	173	29.7	714	122.6	1,793	307.9
1949	0	0.0	3	0.5	2	0.3	12	2.1	2	0.3	13	2.2	158	27.0	735	125.6	1,998	341.5

Year	NEPH.		PNEUM'NIA		SUICIDE		HOMICIDE		ACCIDENTS		APOPLEXY		ALCOHOL		ALL. COM.	
	D	R	D	R	D	R	D	R	D	R	D	R	D	R	D	R
1910	222	58.7	282	74.6	81	21.4	37	9.8	514	135.9	112	29.6	56	14.7	800	211.5
1911	204	51.5	354	89.3	109	27.5	51	12.9	447	112.8	126	31.8	40	10.1	725	183.0

TABLE VI (Continued)

Year	NEPH. D	NEPH. R	PNEUM'NIA D	PNEUM'NIA R	SUICIDE D	SUICIDE R	HOMICIDE D	HOMICIDE R	ACCIDENTS D	ACCIDENTS R	APOPLEXY D	APOPLEXY R	ALCOHOL D	ALCOHOL R	ALL. COM. D	ALL. COM. R
1912	246	59.4	387	93.4	83	20.0	59	14.2	475	114.7	155	37.4	63	15.2	711	171.7
1913	247	57.2	508	117.6	115	26.6	44	10.2	564	130.5	152	35.2	74	17.1	921	213.1
1914	249	55.4	464	103.1	125	27.8	58	12.9	498	110.6	170	37.8	66	14.6	777	172.6
1915	339	72.4	511	109.2	103	22.0	53	11.3	556	118.8	196	41.9	66	14.1	790	168.8
1916	359	73.9	536	110.3	113	23.2	86	17.7	695	143.0	210	43.2	86	17.7	949	195.3
1917	358	71.0	690	136.9	113	22.4	92	18.3	870	172.6	212	42.1	124	24.6	1,032	204.8
1918	322	61.7	1,298	248.7	97	18.6	58	11.1	625	119.7	213	40.8	60	11.5	3,536	677.5
1919	265	49.1	530	98.2	86	15.9	43	8.0	509	94.3	243	45.0	10	1.9	1,442	267.1
1920	273	49.7	576	104.9	86	15.7	46	8.4	473	86.2	246	44.8	10	1.8	924	168.3
1921	279	51.0	412	75.3	94	17.2	41	7.5	388	70.9	242	44.2	19	3.4	689	125.9
1922	298	54.6	482	88.3	88	16.1	42	7.7	433	79.3	255	46.7	22	4.0	830	152.0
1923	267	49.0	399	73.2	77	14.1	26	4.8	470	86.2	263	48.3	25	4.6	815	149.5
1924	295	54.2	364	66.9	79	14.5	37	6.8	519	95.4	272	50.0	15	2.8	806	148.2
1925	301	55.5	437	80.5	102	18.8	51	9.4	505	93.0	322	59.3	41	7.6	753	138.7
1926	236	43.6	501	92.5	92	17.0	45	8.3	477	88.0	327	60.4	27	5.0	862	159.1
1927	325	60.1	372	68.8	113	20.9	37	6.8	506	93.6	290	53.6	58	10.7	795	147.1
1928	333	61.7	458	84.9	110	20.4	44	8.2	568	105.3	336	62.3	48	8.9	997	184.8
1929	395	73.4	439	81.5	116	21.5	54	10.0	526	97.7	320	59.4	60	11.1	863	160.3
1930	395	73.5	425	79.1	136	25.3	57	10.6	498	92.6	357	66.4	69	12.8	635	118.1
1931	336	62.2	384	71.1	126	23.1	39	7.2	510	94.4	346	64.0	33	6.1	683	126.4
1932	348	64.1	348	64.1	125	23.0	45	8.3	442	81.5	358	66.0	15	2.8	658	121.3
1933	315	57.8	321	58.9	114	20.9	30	5.5	508	93.3	354	65.0	24	4.4	611	112.2
1934	350	64.0	416	76.1	104	19.0	39	7.1	576	105.3	379	69.3	20	3.7	601	109.9
1935	355	64.7	674	122.8	96	17.5	34	6.2	552	100.5	450	82.0	14	2.5	689	125.5
1936	347	62.9	631	114.5	102	18.5	26	4.7	660	119.7	447	81.1	25	4.5	524	95.1
1937	305	55.1	528	95.4	101	18.2	27	4.9	599	108.2	416	75.2	32	5.8	646	116.7
1938	314	56.5	355	63.9	103	18.5	26	4.7	587	105.6	437	78.6	27	4.9	514	92.5
1939	327	58.6	310	55.6	106	19.0	27	4.8	531	95.2	438	78.5	23	4.1	528	94.7
1940	318	56.8	321	57.3	114	20.4	25	4.5	528	94.3	539	96.2	41	7.3	434	77.5
1941	326	58.0	248	44.1	98	17.4	16	2.8	565	100.5	540	96.1	38	6.8	452	80.4
1942	321	57.6	255	45.5	97	17.0	21	3.7	480	85.5	539	96.2	42	7.5	360	64.3
1943	320	66.1	261	53.9	67	13.8	15	3.1	619	127.9	477	98.6	29	6.0	398	82.2

TABLE VI (Continued)

Year	NEPH.		PNEUM'NIA		SUICIDE		HOMICIDE		ACCIDENTS		APOPLEXY		ALCOHOL		ALL. COM.	
	D	R	D	R	D	R	D	R	D	R	D	R	D	R	D	R
1944	308	66.3	246	52.9	51	11.0	12	2.6	491	105.6	546	117.4	11	2.4	358	77.0
1945	270	54.0	198	39.6	74	14.8	19	3.8	524	104.8	484	96.8	17	3.4	307	61.4
1946	233	46.6	225	45.0	94	18.8	27	5.4	530	106.0	499	99.8	15	3.0	267	53.4
1947	259	51.8	218	43.6	98	19.6	13	2.6	550	110.0	493	98.6	20	4.0	256	51.2
1948	250	42.9	178	36.5	89	15.3	18	3.1	591	101.5	589	101.1	15	2.6	336	40.5
1949	129	22.0	142	24.2	91	15.6	21	3.6	557	95.2	591	101.5	17	2.9	201	34.4

GENERAL SUMMARY OF THE BIRTHS, DEATHS, MARRIAGES, DIVORCES AND ADOPTIONS 1948-1949

●

Births and Adoptions

	1948		1949	
	Births	Adoptions	Births	Adoptions
TOTAL	14,992	459	15,359	421
January	1,194	21	1,257	29
February	1,139	46	1,157	26
March	1,274	31	1,272	39
April	1,229	41	1,289	33
May	1,328	25	1,321	32
June	1,225	42	1,244	32
July	1,292	47	1,413	44
August	1,384	32	1,287	24
September	1,283	59	1,330	43
October	1,238	34	1,342	39
November	1,156	45	1,238	39
December	1,250	36	1,209	41

BIRTHS

	1948	1949
Males	7,579	7,636
Females	7,413	7,723

Sex Ratio (1948) 102 Males to 100 Females
(1949) 99 Males to 100 Females

	1948	1949
White	14,004	14,318
Indian	777	825
Mexican	153	176
Yellow	35	21
Black	15	14
Brown	8	5
Illegitimates	302	313
Stillbirths	228	231
Twins	182	174
Triplets	1	2
Adoptions	459	421

The births averaged 1,249 per month in 1948, and 1,280 in 1949. Nineteen hundred and forty-nine was a record high for births reported in one calendar year. For 1948, 14,787 births occurred in Montana and 211 non-resident mothers had their babies in Montana, while 426 Montana mothers went out of the state for confinement. For 1949, these figures were 15,138 occurred in Montana, 213 non-resident and 434 Montanans elsewhere.

The states immediately adjacent to Montana, plus Washington, furnished the greatest number of non-resident births, while the Montanans born out of the State were mostly in these same states. The birth rate in 1948 was 25.7 and in 1949 it was 26.3. The sex ratio for 1949 shows 99 boys to 100 girls and is the first time in history more girls than boys have been registered.

The illegitimates were 2% of the total both years. Four hundred and fifty-nine substitutions for adoptions were made in 1948, with a drop of 38 to 421 in 1949.

Deaths

	1948	1949
TOTAL	5,873	5,883
January	505	541
February	504	454
March	501	483
April	470	500
May	526	510
June	495	503
July	496	492
August	468	465
September	439	421
October	507	505
November	466	460
December	496	549

DEATHS

	1948	1949
Males	3,796	3,827
Females	2,077	2,056

Sex Ratio (1948) 183 Males to 100 Females
(1949) 186 Males to 100 Females

	1948		1949	
Single	1,582	26.9%	1,443	24.5%
Married	2,428	41.3	2,541	43.2
Widowed	1,485	25.3	1,467	24.9
Divorced	247	4.2	272	4.6
Unknown	131	2.2	160	2.7

	1948	1949
White	5,544	5,597
Indian	273	227
Mexican	25	22
Black	17	14
Yellow	13	23
Brown	1	0

The average monthly deaths amounted to 489 in 1948, and 490 in 1949. Five thousand eight hundred and fifty (5,850) deaths in 1948 and 5,861 deaths in 1949 actually occurred in Montana, which included 229 non-residents in 1948 and 265 non-residents in 1949, while 252 Montanans died elsewhere in 1948 and 287 outside Montana in 1949. Similar to the births, most of the interchanges occurred in adjacent states, with the addition of our residents dying in Minnesota and California. The death rate for both years was 10.1 per 1,000 population. The marital status shows approximately one-quarter of those dying were single, one-quarter widowed, two-fifths were married, 4.5% divorced, and 2.5% marital status unkown.

Marriages

	1948	1949
TOTAL	7,131	6,981
January	424	429
February	397	364
March	420	413
April	446	480
May	578	520
June	921	975
July	640	668
August	684	694
September	777	753
October	597	579
November	636	554
December	611	552

	1948		1949	
Civil Ceremony	2,231	31.3%	2,031	29.1%
Religious	4,711	66.1	4,703	67.4
Declaration	189	2.6	247	3.5

	1948		1949	
	Groom	Bride	Groom	Bride
White	6,984	6,989	6,823	6,821
Indian	97	99	97	106
Mexican	30	27	23	18
Black	12	12	4	4
Yellow	5	4	2	2
Brown	3	0	2	0

	1948		1949	
Single	5,291	4,858	5,043	4,692
Divorced	1,518	1,819	1,634	1,808
Widowed	322	454	304	481
Non-resident	1,449	1,309	1,547	1,347

The number of marriages continues to decline from the all-time highhigh reached in 1946. The marriage rate for 1948 and 1949 was 12.2 and 11.9 per 1,000 of population respectively. June continues to be the bride's month, with September second. Religious ceremonies were performed for approximately two-thirds of the marriages, with civil ceremonies slightly less than one-third and declarations 3% of the time. Residents of every state in the Union, Hawaii, Alaska, the Canal Zone, Puerto Rico and eight foreign countries were married in Montana during the biennium. Ninety-eight percent were among the white race and two percent among the other races. The top five counties where marriages were performed both years were Yellowstone, Cascade, Silver Bow, Missoula and Lewis and Clark.

Divorces

	1948	1949
TOTAL	2,090	1,995
January	152	111
February	160	148
March	196	161
April	176	168
May	170	179
June	185	192
July	177	182
August	163	188
September	209	204
October	165	147
November	177	152
December	160	163

PLAINTIFF

	1948		1949	
Husband	571	27.3%	519	26.0%
Wife	1,515	72.5	1,466	73.5
Other	4	0.2	10	0.5

GROUNDS

	1948	1949
Cruelty	1,261	1,258
Desertion	371	330
Neglect	275	258
Annulment	93	65
Other	90	84
Minor Children Involved	1,011	994

The number of divorces, like the marriages, have continued to drop since 1946, the all-time high. The divorce rates for the two years were 3.6 and 3.4 per 1,000 of population respectively for 1948 and 1949. The marriage-divorce ratio was 341 to 100 in 1948 and 348 to 100 in 1949, approximately 3.5 marriages per divorce.

The husbands were plaintiff one to the wives' three. Cruelty was by far the outstanding cause for divorce. There were 93 annulments in 1948 and 65 in 1949.

A breakdown of events and rates for any county will be made on request.

The Bureau of Vital Statistics is most appreciative for the prompt reporting each month and for the courteous replies to queries from the local registrars and county clerks. The physicians, hospitals, morticians and coroners have also been most cooperative in reporting their events on time and in furnishing supplementary data to complete information for accurate records.

ITEMIZED DIVISIONAL EXPENDITURES
July 1, 1948 to June 30, 1950

M. S. Stanley, B. S., Fiscal Agent

Administration	State	Federal	Grand Total
Salaries	$ 25,233.37	$ 11,913.41	$ 37,146.78
PERS (Retirement)	8,246.18	5,813.21	14,059.39
Travel	1,409.30	3,182.86	4,592.16
Office Supplies and Equipment	1,337.81	2,111.81	3,449.62
Insurance and Bonds	877.77	1,252.93	2,130.70
Maintenance and Repairs	807.10		807.10
Miscellaneous	235.75	643.14	878.89
	$ 38,147.28	$ 24,917.36	$ 63,064.64

Epidemiology			
Salaries	$ 14,293.53	$ 10,047.07	$ 24,340.60
Travel	1,415.18	1,492.85	2,908.03
Office Expense and Equipment	1,578.07	3,359.10	4,937.17
Scientific Supplies and Equip.	24.00	44.87	68.87
Hospital Care		621.80	621.80
Drugs and Arsenicals	5,030.61	957.47	5,988.08
Biologicals	1,226.34	832.25	2,058.59
	$ 23,567.73	$ 17,355.41	$ 40,923.14

Hygienic Laboratory			
Salaries	$ 27,533.66	$ 35,655.22	$ 63,188.88
Travel	623.17	162.56	785.73
Office Expense and Equipment	1,881.76	4,302.72	6,184.48
Scientific Supplies and Equip.	931.42	5,062.30	5,993.72
Animals and Expense	553.31	2,223.04	2,776.35
Miscellaneous	38.75		38.75
	$ 31,562.07	$ 47,405.84	$ 78,967.91

Sanitary Engineering			
Salaries	$ 23,581.16	$ 25,554.79	$ 49,135.95
Travel	533.14	7,238.31	7,771.45
Office Expense and Equipment	1,143.51	2,487.30	3,630.81
Scientific Supplies and Equip.	113.67	1,246.54	1,360.21
Miscellaneous and Express	240.81	1,681.60	1,922.41
	$ 25,612.29	$ 38,208.54	$ 63,820.83

Vital Statistics			
Salaries	$ 19,096.71	$ 6,006.00	$ 25,102.71
Travel	149.80	144.67	294.47
Office Expense and Equipment	1,996.08	1,053.74	3,049.82
Printing and Binding	1,287.59	777.24	2,064.83
	$ 22,530.18	$ 7,981.65	$ 30,511.83

ITEMIZED DIVISIONAL EXPENDITURES (Continued)

Food and Drug

Salaries	$ 18,973.25	$ 6,606.67	$ 25,579.92
Travel	924.01	3,845.03	4,769.04
Office Expense and Equipment	1,011.10	819.13	1,830.23
Scientific Supplies and Equip.	267.57	667.39	934.96
Printing and Binding	789.23	62.20	851.43
Miscellaneous	10.40		10.40
	$ 21,975.56	$ 12,000.42	$ 33,975.98

Industrial Hygiene	State	Federal	Grand Total
Salaries	$ 19,651.15	$ 2,058.21	$ 21,709.36
Travel	169.01	2,699.42	2,868.43
Office Expense and Equipment	316.33	799.56	1,115.89
Scientific Supplies and Equip.	184.57	2,551.46	2,736.03
Miscellaneous	50.07	3.00	53.07
	$ 20,371.13	$ 8,111.65	$ 28,482.78

Dental Health

Salaries	$ 14,257.33	$ 2,091.19	$ 16,348.52
Travel	688.07	1,726.80	2,414.87
Office Expense and Equipment	911.55	1,161.59	2,073.14
Scientific Supplies and Equip.	103.61	489.65	593.26
Miscellaneous	120.00		120.00
	$ 16,080.56	$ 5,469.23	$ 21,549.79

Tuberculosis Control

Salaries	$ 37,229.16	$ 1,490.00	$ 38,719.16
Travel	8,243.37	9,606.42	17,849.79
Office Expense and Equipment	3,947.84	5,215.92	9,163.76
Scientific Supplies and Equip.	5,074.95	8,081.62	13,156.57
Heat, Light and Rent	2,312.55	317.47	2,630.02
Miscellaneous	11.50	104.85	116.35
	$ 56,819.37	$ 24,816.28	$ 81,635.65

Hospital Facilities

Salaries	$ 21,160.94	$ 2,408.68	$ 23,569.62
Travel	3,273.00	321.24	3,594.24
Office Expense and Equipment	2,347.83	304.77	2,652.60
Purchase of Vehicle	734.40		734.40
Miscellaneous	230.27		230.27
	$ 27,746.44	$ 3,034.69	$ 30,781.13

Cerebral Palsy

Salaries		$ 32,519.29	$ 32,519.29
Travel		3,119.00	3,119.00
Office Expense and Equipment		2,302.35	2,302.35
Scientific Supplies and Equip.		1,705.02	1,705.02
Foster Home Care		3,363.83	3,363.83
		$ 43,009.49	$ 43,009.49

ITEMIZED DIVISIONAL EXPENDITURES (Continued)

Crippled Children			
Salaries	$ 27,740.54		$ 27,740.54
Doctors' Fees and X-Ray Treat.	10,476.77	22,574.62	33,051.39
Hospitalization	46,579.11	78,305.85	124,884.96
Clinic Fees	6,304.13	2,750.00	9,054.13
Appliances	5,888.59	1,982.31	7,870.90
Travel	4,621.66	2.74	5,318.69
Office Expense and Equipment	1,537.08	2.74	1,539.82
	$103,147.88	$106,312.55	$209,460.43

Public Health Nursing			
Salaries	$ 16,770.28	$ 20,563.55	$ 37,333.83
County Nurse Salaries	38,665.61		38,665.61
Travel	752.99	12,879.83	13,632.82
	$ 56,188.88	$ 33,443.38	$ 89,632.26

Maternal and Child Health	**State**	**Federal**	**Grand Total**
Salaries	$ 2,192.97	$ 15,102.75	$ 17,295.72
Travel	599.36	1,251.84	1,851.20
Office Expense and Equipment	4,778.43	12,184.95	16,963.38
Scientific Supplies and Equip.		1,075.82	1,075.82
Miscellaneous	96.93	291.74	388.67
	$ 7,667.69	$ 29,907.10	$ 37,574.79
Health Education			
Salaries	$ 4,605.00	$ 18,315.19	$ 22,920.19
Travel	224.73	4,698.17	4,922.90
Office Expense and Equipment	76.95	3,340.20	3,417.15
Miscellaneous	6.61	54.78	61.39
	$ 4,913.29	$ 26,408.34	$ 31,321.63
Merit System		$ 10,025.19	$ 10,025.19
Training			
Stipend		$ 1,581.83	$ 1,581.83
Tuition		1,169.00	1,169.00
Travel		3,181.68	3,181.68
		$ 5,932.51	$ 5,932.51
Blood Bank*			
Miscellaneous	$ 407.98		$ 407.98
Heart and Rheumatic Fever*			
Salaries		$ 609.33	$ 609.33
Travel		178.42	178.42
Scientific Supplies and Equip.		3,085.05	3,085.05
Hospital Care		62.78	62.78
		$ 3,935.58	$ 3,935.58

ITEMIZED DIVISIONAL EXPENDITURES (Continued)

Big Horn County*			
Salary	$ 5.00	$ 1,530.00	$ 1,535.00
Cascade County			
Salaries	$ 6,812.50	$ 9,301.00	$ 16,113.50
Travel	387.54	932.83	1,320.37
	$ 17,200.04	$ 10,233.83	$ 17,433.87
Custer County*			
Salaries	$ 1,020.00	$	$ 1,020.00
Travel		261.90	261.90
	$ 1,020.00	$ 261.00	$ 1,281.90
Fergus County			
Salaries	$ 910.00	$ 625.50	$ 1,535.50
Gallatin County			
Salaries	$ 1,576.53	$ 7,263.24	$ 8,839.77
Travel	36.21	807.82	844.03
	$ 1,612.74	$ 8,071.06	$ 9,683.80
Lewis and Clark County			
Salaries	$ 2,630.00	$ 122.50	$ 2,752.50
Travel	843.39	145.76	989.15
	$ 3,473.39	$ 268.26	$ 3,741.65
Missoula County			
Salaries	$ 7,505.48	$ 7,049.31	$ 14,554.79
Travel		931.16	931.16
	$ 7,505.48	$ 7,980.47	$ 15,485.95
Grand Totals	$478,464.98	$477,246.23	$955,711.21

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* For one year only